GROUNDWATER MONITORING REPORT 2011

January 31, 2012

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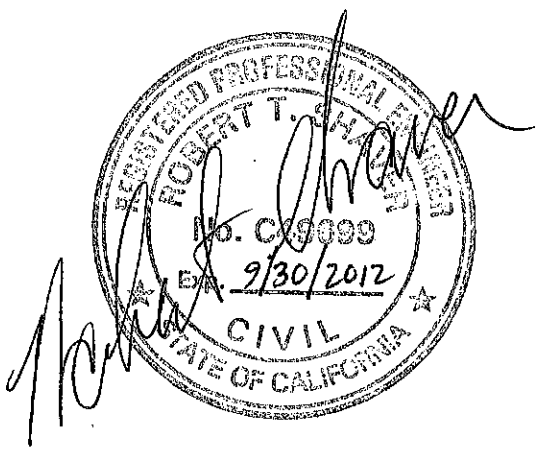
PROFESSIONAL CERTIFICATION

The 2011 Groundwater Monitoring Report was prepared by Alameda County Water District (ACWD) staff under the general direction of Robert Shaver, and under the immediate supervision of Steven Inn and Eileen Chen. The information and other content of this report, including quantities provided in the tables, text, and figures, were developed with a level of effort and methods considered adequate for the purpose of this report's creation; that is, to provide data to facilitate the management of ACWD's groundwater resources.



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I. OVERVIEW

The Spring 2011 monitoring program was conducted during March and April 2011 and included 278 wells within the Alameda County Water District (ACWD). Water levels were measured in 234 wells and water samples were collected for chloride and total dissolved solids analyses from 86 wells. The results from this effort and the status of the wells are documented in Appendix C.

The Fall 2011 monitoring program, which included 282 wells, was conducted from August to September 2011. Water levels were measured in 241 wells and water samples were collected for chloride and total dissolved solids analyses from 186 wells. The status of each well, water elevations, and chemical results are summarized in Appendix D. Water elevation data were used to develop piezometric head contour maps which enable interpretation of groundwater flow patterns. The direction of groundwater flow is generally toward the production wellfield in the Above Hayward Fault (AHF) sub-basin. The direction of groundwater flow is generally away from the recharge area in all three aquifers in the Below Hayward Fault (BHF) sub-basin. The overall changes in the groundwater basin's water quality were interpreted through the use of chloride and total dissolved solids (TDS) concentration contour maps.

II. INTRODUCTION

ACWD provides water service to approximately 328,300 people in the cities of Fremont, Newark, and Union City in the San Francisco Bay Area of California (Figure 1). The portion of ACWD's water supply produced from wells in the Niles Cone Groundwater Basin has historically been between 30 and 62 percent annually, depending upon seasonal and annual demand requirements. During FY 2010/11, groundwater accounted for 40 percent of ACWD's distribution water supply. Except for some areas to the northwest and southeast, ACWD's boundaries approximately coincide with the Niles Cone Groundwater Basin as defined by the California Department of Water Resources (DWR) (Figure 1). The Newark and Centerville Aquifers extend beyond ACWD's boundaries to the San Francisco peninsula to the west (DWR, 1968), and the Deep Aquifers are hydraulically connected to the South East Bay Plain Basin to the north (Luhdorff and Scalmanini, 2003). Since 1914, ACWD has actively managed and protected the groundwater basin and conserved the water of the Alameda Creek Watershed.

ACWD has been monitoring the Niles Cone Groundwater Basin since its formation in 1914. A variety of monitoring programs were implemented and modified over time due to historical groundwater management needs, specific groundwater related studies, compliance with water rights reporting, and direction of the ACWD Board of Directors. Changes in the monitoring programs also reflect the destruction or loss of wells due to development, and the availability of newly constructed wells. Currently, ACWD monitors seven wells on a weekly basis and 52 wells on a monthly basis.

Data for 26 wells with monthly water level measurements are also being submitted to DWR as part of the new California Statewide Groundwater Elevation Monitoring (CASGEM) Program, which was authorized by SBX7-6, enacted in November 2009. CASGEM was created by DWR pursuant to Water Code Sections 10920-10936, which mandates a statewide groundwater

elevation monitoring program to track seasonal and long-term groundwater elevation trends in California's groundwater basins. Groundwater elevation measurements for 2011 along with the required groundwater monitoring plan for the Niles Cone Groundwater Basin were submitted to DWR in December 2011 in advance of the SBX7-6 deadline of January 1, 2012.

The Spring/Fall Groundwater Monitoring Program, initiated in 1961, is a semiannual field effort to document the status of wells, obtain water level measurements, and collect groundwater samples. The Spring Program is conducted in March and April, and the Fall Program is conducted primarily in September. The Spring Program is conducted to provide insight into subsurface conditions throughout the service area when water levels tend to be at their highest levels. The Fall Program's purpose is to update information on groundwater flow and quality and to provide insight into subsurface conditions when water levels tend to be at their lowest levels. To verify the consistency of data and to further define the isocontour lines based on water quality conditions, a larger set of wells is sampled during the Fall Program. Monitoring wells are selected based on overall coverage, accessibility, and available historic data.

This report describes the Fall 2011 data acquisition effort, presents the water elevation and water quality data, gives an interpretation of the data, and provides conclusions. The Spring 2011 data are included in Appendix C.

The U.S. Geological Survey (USGS) (Clark, 1915) conducted the first hydrogeologic study in this groundwater basin. Several hydrogeologic studies have been conducted by DWR: 1960, 1963, 1967, 1968, 1973, and 1975. The most comprehensive of these studies is Evaluation of Groundwater Resources, South Bay (1968) and Appendix C: Geology (1967). Christine Kolterman's 1993 dissertation (Stanford University) applied a process imitating approach to characterizing spatial variability in unconsolidated sediments for the Niles Cone Groundwater Basin. The USGS produced two companion reports providing a database of wells and a regional general hydrogeology for the South San Francisco Bay (Leighton, Fio, and Metzger, 1995 and Fio and Leighton, 1995). The California Regional Water Quality Control Board produced a report that documented hydrogeology, existing beneficial uses, ambient groundwater quality, and groundwater protection programs in the Niles Cone and two other South Bay groundwater basins (2003). In addition to these studies, ACWD annually produces Groundwater Monitoring Reports and Survey Reports on Groundwater Conditions.

III. PURPOSE

The Spring/Fall Groundwater Monitoring Program serves a number of purposes:

- To evaluate the status of wells in the program owned by ACWD, other public agencies (i.e., Alameda County Flood Control and Water Conservation District, East Bay Regional Park District, Bay Area Rapid Transit, Caltrans, and Cities of Fremont, Hayward, and Union City), and private owners;

- To conduct water level measurements and collect water samples;

- To describe the movement of groundwater;
- To characterize groundwater quality within the basin; and
- To track water level and quality trends in the groundwater basin.

The Spring and Fall Groundwater Monitoring Program provides critical information used in the management of ACWD's groundwater resources.

IV. WATER RESOURCES AND HYDROGEOLOGY

A. Water Resources

ACWD obtains water from local and imported sources. The local sources of water are runoff from the Alameda Creek Watershed and deep percolation of precipitation and applied water. Imported water is obtained from the State Water Project through the South Bay Aqueduct and from the San Francisco Public Utilities Commission through the Hetch Hetchy Aqueduct (Figure 2). Watershed runoff and a portion of the State Project water is diverted to Alameda Creek and percolation ponds for recharge of the groundwater basin. The percolation ponds were former gravel quarry pits that were mined to depths ranging from 70 to 120 feet relative to the surrounding ground surface (approximately -20 to -70 feet Mean Sea Level). The principal hydrogeologic unit beneath ACWD's service area is the Niles Cone Groundwater Basin. The main point of surface water entry into the Niles Cone Groundwater Basin occurs through Alameda Creek and the percolation ponds. Groundwater is extracted from the basin through pumping of ACWD's production wells, privately owned wells, and ACWD's Aquifer Reclamation Program (ARP) wells.

B. Hydrogeology

1. Niles Cone Groundwater Basin

The Niles Cone Groundwater Basin is an alluvial aquifer system consisting of unconsolidated gravel, sand, silt, and clay. The gravel and sand deposits have the highest permeability and thus comprise the aquifers; conversely, silt and clay layers have low permeability and form the aquitards. An aquifer is a water-bearing geologic formation which will yield an appreciable or economically beneficial supply of water. In 1968, DWR used the term aquiclude, a saturated geologic unit that is incapable of transmitting significant quantities of water under ordinary hydraulic gradients (Freeze and Cherry, 1979), for the low permeability beds that confine the aquifers. In 1973, DWR reclassified these confining beds as aquitards, which are relatively low permeability geologic beds in a stratigraphic sequence that store water, but will not transmit it rapidly enough to supply wells or springs. These beds may be permeable enough to transmit water in quantities that are significant for the study area, even though water movement per acre is insignificant (DWR, 1973).

The Niles Cone Groundwater Basin is divided by the Hayward Fault. The Hayward Fault is an active fault with low permeability that impedes the lateral flow of groundwater. Large differences in water levels on either side of the fault demonstrate the relatively impermeable nature of the fault. ACWD manages both the Above Hayward Fault and the Below Hayward Fault sub-basins (Figure 2). The AHF sub-basin on the east side of the Hayward Fault is composed of highly permeable sediments referred to as the AHF Aquifer. The BHF sub-basin is composed of a series of relatively flat lying aquifers separated by extensive clay aquitards. Figure 3 is an illustration of the basin and the aquifers based on a DWR conceptual figure (DWR, 1968).

Over time, the alluvial/fluvial depositional environment produced thick coarse grain sediments along present day Alameda Creek and also along historic stream channels (now buried). With distance westward, both the thickness and grain size of the aquifers decreases while the intervening clay aquitards become thicker (DWR, 1967). The aquitards appear to be absent just west of the Hayward Fault in the hydrogeologic region called the forebay area.

The shallowest regional aquifer in the BHF sub-basin, the Newark Aquifer, is an extensive permeable gravel and sand layer between 40 and 140 feet below ground surface (bgs), except in the forebay area where it begins at the surface. The thickness of the Newark Aquifer ranges from less than 20 feet at the western edge of the basin to more than 140 feet at the Hayward Fault (DWR, 1968). The Newark Aquifer is overlain in most of the sub-basin by a thick layer of silt and clay called the Newark Aquiclude (DWR, 1968). The Newark Aquiclude is absent in the forebay area, allowing direct recharge to the Newark Aquifer from Alameda Creek and the recharge ponds. Within the Newark Aquiclude, layers of sand and silt comprise a non-regional hydrogeologic unit known commonly as the shallow water-bearing zone.

An extensive thick clay aquitard separates the Newark Aquifer from the Centerville Aquifer. The Centerville Aquifer, the top of which lies at an average depth of 180 to 200 feet bgs, overlies a thick clay aquitard, which in turn overlies the Fremont Aquifer which exists in the interval of 300 to 390 feet bgs. The Centerville and Fremont Aquifers are considered as one combined aquifer (Centerville-Fremont Aquifer) in some parts of the basin, based on lithology and water level data that indicate that they are in good hydrogeologic connection. However, water level and water chemistry results indicate that in some areas of the basin, these two aquifers are isolated from each other. Lithologic analysis also confirms their separation in portions of the basin. This isolation is best seen at some of the well clusters with wells screened in each aquifer. An example of this is seen in well cluster 4S/2W-36N011 (Centerville Aquifer) and 4S/2W-36N010 (Fremont Aquifer), with chloride concentrations of 380 and 1,200 parts per million (ppm), respectively, and 5.0 feet difference in water elevations.

The deepest water-bearing units, referred to collectively as the Deep Aquifers, are present at approximately 400 feet bgs and deeper and separated from the overlying Fremont Aquifer by a regional aquitard. Also, based on ACWD's lithologic data and DWR (1967), these deep aquifers are both hydraulically separated and connected by the

presence or absence of intervening clays dependent on the location in the basin, and extend beyond the limits of the Niles Cone Groundwater Basin to act as conductive layers for the migration of groundwater out of the basin.

The AHF Aquifer is both unconfined and confined due to the presence of local low permeability layers. The Newark Aquifer is confined in all areas except in the forebay area, where the overlying aquitard is absent. The Centerville-Fremont and Deep Aquifers are both confined.

In addition to the Niles Cone, there are four additional smaller physiographic alluvial deposits defined by DWR: Dry Creek Cone, Mission Alluvial Apron, Mission Upland, and Warm Springs Alluvial Apron (Figure 2) (DWR, 1967 & 1968). Each of these areas is described in the following sections.

2. Dry Creek Cone

A separate physiographic feature located in the northeast corner of ACWD is the Dry Creek Cone. The Dry Creek Cone is younger alluvium that overlies the Niles Cone Alluvium. The Dry Creek fan extends approximately three miles southwest from the hills and reaches a maximum thickness of 350 feet (DWR, 1967 and 1968). The sand and gravel aquifers in the Dry Creek Cone are thin and discontinuous and most of the cone consists of clay. The number and thicknesses of aquifers increases toward the point where Dry Creek emerges from the hills (DWR, 1967 & 1968).

3. Mission Alluvial Apron and Mission Upland

The Mission Alluvial Apron and the Mission Upland are located in the southeast corner of ACWD, east of the Hayward Fault. The Mission Alluvial Apron is comprised of shallow alluvium overlying the Santa Clara Formation. Well data, in the northern portion of the Mission Alluvial Apron, indicate that the upper 100 feet of material contain over 50 percent gravel with higher gravel percentages below 100 feet (DWR, 1967 & 1968). Recharge is primarily from infiltration of stream flow and precipitation with groundwater moving in a northwesterly direction into the alluvium of the Niles Cone east of the Hayward Fault.

The Mission Upland includes all exposed portions of the Santa Clara Formation. The Santa Clara Formation thicknesses may exceed 500 feet (DWR, 1986). Although highly permeable, movement of water westerly to the Warm Springs Alluvial Apron is limited because of the Hayward Fault and the easterly dip of the Santa Clara formation.

4. Warm Springs Alluvial Apron

The Warm Springs Alluvial Apron is located in the southeast corner of ACWD, just west of the Mission Upland. The aquifers in the Warm Springs Alluvial Apron are thin and fine-grained, with limited recharge. Well logs indicate that the upper 100 feet of the aquifer material contains less than 17 - 24 percent gravel (DWR, 1967 & 1968).

Alluvium between 100 and 200 feet below ground surface is more permeable than either shallower or deeper intervals, and up to 37% gravel has been noted from well logs. Groundwater in the alluvial apron flows to the west, but flow is limited due to low permeability deposits.

C. Groundwater Quality

Groundwater quality in the AHF Aquifer is acceptable for potable use, however, groundwater quality in certain areas of the BHF aquifers has been degraded by saltwater intrusion. The saltwater intrusion occurred due to persistent pumping from the basin and was first noticed in the 1920's. Many years of chronic overdraft caused the groundwater levels in the Newark Aquifer to drop below sea level. This relative elevation difference between the groundwater in the basin and the saline water from San Francisco Bay caused a landward direction of groundwater flow through the Newark Aquifer and intrusion of saltwater into the groundwater basin. Several decades of saltwater intrusion occurred and saline water migrated as far inland as the forebay area. The piezometric heads in the deeper aquifers are generally lower than that of the Newark Aquifer, and the aquitards separating the aquifers are thin to absent in the forebay area. As a result, saline water in the forebay area migrated downward from the Newark Aquifer into the lower aquifers. Also, saline water may have migrated downward from the Newark Aquifer to the deeper aquifers through abandoned and improperly sealed water wells. A DWR conceptual illustration of saline water movement into the basin during overdraft conditions is shown in Figure 3.

Since 1962, ACWD has purchased State Water Project water supplies to supplement local recharge and raise groundwater levels. This has resulted in bringing the water table above sea level as of 1972 (BHF indicator well) and returning the hydraulic gradient to its natural bayward direction in the Newark Aquifer. Although there has been substantial improvement in the basin, a considerable volume of saline water still remains in the aquifers.

In order to manage water supplies more effectively, ACWD has implemented the following to increase production and improve water quality:

- Artificial Recharge - Improve the recharge capability by constructing inflatable dams in Alameda Creek and increasing percolation capacity in the abandoned gravel quarries.

- Aquifer Reclamation Program (ARP) - Pump entrapped saltwater from the basin to either the Newark Desalination Facility or San Francisco Bay to produce greater usable storage and prevent movement of saltwater in the direction of ACWD's production wells.

- Newark Desalination Facility (dedicated on September 19, 2003) - Treat brackish groundwater from selected ARP wells using reverse osmosis, blend the resulting water (permeate) with other supplies before delivery to ACWD's customers, and discharge concentrate to San Francisco Bay under a National Pollutant Discharge Elimination System general permit. The facility was expanded to increase permeate

production capability from 5 million gallons per day (mgd) to 10 mgd for a total blended production of up to 12.5 mgd. The expansion was completed on August 24, 2010.

V. FALL 2011 FIELD WORK

The field effort of the Fall 2011 Groundwater Monitoring Program was conducted between August 22 and September 29, 2011 and is summarized in Table 1. Field personnel recorded the status of program wells and measured the water levels in 241 wells. A total of 193 representative wells were selected for groundwater sampling and analyses. However, groundwater samples could only be collected from 186 of these wells due to access problems or wells being inactive during the time of sampling. One ACWD production well was sampled early, near the beginning of August, in order to coordinate with the well's operating and routine sampling schedule. As new ACWD monitoring wells are constructed to fill in data gaps and replace private or unreliable wells, the newly constructed wells are incorporated into the monitoring program; accordingly, wells with access problems and design uncertainties are removed. However, some wells with incomplete well construction information are kept in the program so that the physical status of the wells could be updated and data comparisons made with historical trends (these wells are annotated on the figures with gray labels).

Groundwater samples collected during the Fall 2011 program were analyzed for chloride and TDS. Chloride results are indicative of general water quality in the Niles Cone Groundwater Basin, especially west of the I-880 freeway. Chloride is a surrogate for TDS in water that is significantly influenced by sea water since chloride is a major portion of the TDS in sea water and since it is conserved in the environment due to its non-reactive nature. TDS is also used as a common description of water quality and is essentially synonymous with salinity (Drever, 1988).

All samples were transported under chain of custody protocol to ACWD's analytical laboratory, a California Department of Public Health (CDPH) certified laboratory, for analyses. Quality assurance and quality control measures include comparing current data with historical results and data from neighboring wells, evaluating the ratio of chemical results, and resampling and reanalyzing selected samples as needed.

VI. WATER ELEVATION RESULTS

Appendix D summarizes all well data collected for the Fall 2011 program. Water level measurements ranged from artesian conditions to approximately 73 feet bgs. In general, water elevation increases within each aquifer toward the recharge area and decreases with depth from the Newark Aquifer to the Centerville-Fremont Aquifer, and from the Centerville-Fremont Aquifer to the Deep Aquifers (for more explanation see Section 6.2, Vertical Gradients). Water elevations were calculated by subtracting the depth to water measurement from the well reference point elevation and are referenced in feet from Mean Sea Level (MSL).

ACWD's indicator wells are used to quantify changes in water elevations between 2011 and 2010. Water levels in the AHF Aquifer indicator well, 4S/1W-27D008, increased by 2.5 feet, from 35.8 feet to 38.3 feet MSL. The increase in water levels in the AHF indicator well is also evident in varying degrees throughout the AHF sub-basin. In June 2011, the AHF indicator well documented the highest water level (47.9 feet MSL) ever observed at the well since its installation in 1990.

Water levels in the Newark Aquifer indicator wells, 4S/1W-29A006 and 4S/2W-25M001, increased by 2.0 and 0.9 feet, from 12.0 and 10.2 feet to 14.0 and 11.1 feet MSL, respectively. Water levels in the Centerville-Fremont Aquifer indicator well (4S/1W-19L002) increased by 0.3 feet from -2.8 to -2.5; and water levels in the Deep Aquifer indicator well (4S/1W-31B003), decreased by 0.5 from -4.7 to -5.2 feet MSL, respectively. The increase in water levels observed in the Newark Aquifer and Centerville-Fremont Aquifer indicator wells are also evident regionally in wells in each respective aquifer. The decrease in the Deep Aquifer indicator well appears to be localized; and a regional increase in water level is observed in wells in the Deep Aquifers.

Water elevation contours were produced by computer software interpolation of the data and then modified manually based on contouring logic. For contouring, an attempt was made to use only static water elevations and to not include water elevations from operating wells. The water elevations are piezometric heads, which are the levels to which water will rise in a well if it is not being pumped. The piezometric head is the level of the water surface in an unconfined aquifer and is the combination of elevation and pressure heads in a confined aquifer. Groundwater movement is driven by the groundwater gradient, from high to low values of piezometric head.

A. Horizontal Gradients

Historic and current water elevations are higher for the AHF sub-basin compared to the BHF sub-basin (a difference as high as 30.1 feet in 2011 between BHF indicator well, 4S/1W-29A006, and AHF indicator well, 4S/1W-27D008, and as high as 70 feet historically according to DWR (1967). This water level differential creates a strong gradient from the AHF toward the BHF sub-basins. However, the Hayward Fault is relatively impermeable and impedes the lateral flow of groundwater.

The water elevations from wells screened in the AHF Aquifer, along with contours constructed from these elevations, are presented on Figure 4. One water level data point presented on Figure 4 was not used in the contouring process. It was not considered in the contouring because its water level is significantly higher than AHF Aquifer sub-basin levels, and because the well is located within the Mission Alluvial Apron (Figure 2). The water elevations indicate that groundwater flows radially toward the Peralta-Tyson Wellfield. This groundwater flow is probably due to: recharge from the hills surrounding the basin, Alameda Creek, ACWD's recharge facilities, thinning of the alluvial aquifer along it borders, and pumping at the Peralta-Tyson Wellfield. The average regional horizontal gradient is approximately 0.003 ft./ft.

Water elevations are presented on contour maps for each BHF aquifer (Figures 5, 6, and 7). The water elevations from wells screened in the Newark Aquifer, along with contours constructed from these elevations, are presented on Figure 5. The water elevation contours indicate groundwater flows radially from the recharge area outward to the northwest, west, southwest, and south and locally toward the Mowry Wellfield. The basin wide horizontal component of the groundwater gradient in the Newark Aquifer is approximately 0.0005 ft./ft. Two water level data points in the southeast corner of ACWD (Warm Springs Boulevard and Highway 680) and one water level data point in the southwest corner of ACWD (Highway 84 and Newark slough) on Figure 5 were not used in the contouring process. They were not considered in the contouring because their water levels are significantly higher than Newark Aquifer levels, the wells have incomplete well construction information, and two of the wells are in the proximity of the Warm Springs Alluvial Apron.

Water elevations from wells screened in the Centerville-Fremont Aquifer, along with contours constructed from these elevations, are presented on Figure 6. The water elevation contours indicate that groundwater flows radially inward toward the vicinity of Cherry Street and Central Avenue with an average gradient of approximately 0.0009 ft./ft. The groundwater depression near Cherry Street and Central Avenue is due to the operation of Aquifer Reclamation Program wells Darvon 2 (4S/2W-36A007), Cedar 1 (4S/1W-31N001), Bellflower (5S/1W-06H004), and Farwell (5S/1W-5C001), and industrial well 5S/2W-12B020 (located near Central Avenue and Cherry Street). Historically, groundwater also flows radially towards the Mowry Wellfield; however, this was not observed during the Fall program because none of the production wells that are screened specifically in the Centerville-Fremont Aquifer were running at the time when water levels were measured at the wellfield. Overall, in 2011, pumping from the Centerville-Fremont Aquifer at the Mowry Wellfield has decreased as groundwater pumping for the Newark Desalination Facility increased. The pattern of contour lines is not completely representative of a combined Centerville-Fremont Aquifer, since some of the data are from wells screened entirely in either the Centerville or Fremont Aquifers which are hydraulically separated in certain areas of the basin.

Water elevations from wells screened in the Deep Aquifers, along with contours constructed from these elevations, are presented on Figure 7. Data from the Deep Aquifers are limited, but the water elevation contours indicate that groundwater flows locally toward the Mowry Wellfield and toward other groundwater extraction points. Besides the Mowry Wellfield, groundwater was also extracted from the Deep Aquifers, during the summer and fall of 2011, from municipal/recreational well (4S/2W-26H001) located near I-880 and Highway 84 and municipal/recreational well (4S/2W-36D003) located near Jarvis Avenue and Newark Boulevard. Historically, DWR interpreted a northerly direction of groundwater flow in the Deep Aquifer (DWR, 1967).

A few weeks prior to the start of the Fall 2011 water level monitoring activities, the East Bay Municipal Utility District (EBMUD) completed an eight week injection pilot test at their Bayside facility in San Lorenzo (Figure 1). Treated drinking water from EBMUD's distribution system was injected into a deep aquifer storage and recovery well screened between approximately 520 and 650 feet bgs in the South East Bay Plain Basin. The

proposed injection rate for the test was approximately 1 mgd. Hydraulic connectivity between the deep aquifers of the South East Bay Plain Basin and the Niles Cone Groundwater Basin has been previously confirmed (Luhdorff and Scalmanini, 2003). The impacts of the short-term pilot test on the water elevations of the Niles Cone Deep Aquifers may become evident once details and data from the pilot test are published and analyzed.

B. Vertical Gradients

Vertical gradients are important to determine the vertical direction of groundwater flow within and between aquifers and the magnitude of pressure driving the water. Vertical gradients can only be accurately determined if wells are either nested (multiple wells in the same borehole) or clustered (separate wells in close proximity) to eliminate the horizontal component of head.

ACWD acquired a well cluster (4S/1W-20R003, 4S/1W-20R004, and 4S/1W-20R005) from the Union Pacific Railroad that is solely screened within the Newark Aquifer (Table 2). This well cluster is located adjacent to Alameda Creek and their water elevations indicate a downward gradient in this area of the basin within the Newark Aquifer.

The multi-aquifer clusters of wells in the BHF sub-basin consist of twenty-seven monitoring well sites, three Aquifer Reclamation Program (ARP) well sites, and the Mowry Wellfield. Changes in head of water and water chemistry allow interpretation of the vertical direction of groundwater flow and the potential impact of one aquifer affecting water quality in shallower or deeper aquifers.

Table 2 shows seven clusters selected in order to create a general understanding across the BHF sub-basin. All of the clustered wells in Table 2 indicate that the gradient from the Newark Aquifer is higher than other gradients between deeper aquifers. The high gradient between the Newark Aquifer and the deeper aquifers indicates that the Newark Aquifer is more hydraulically isolated at these cluster locations than the deeper aquifers due to the low permeability aquitard below the Newark Aquifer. Water levels in all of the clustered wells indicate a generally continuously downward gradient from the Newark Aquifer to the immediately underlying aquifer (Centerville or Centerville-Fremont). The vertical gradient in the deeper aquifers is more variable. Both upward and downward gradients were observed between the Centerville Aquifer and the Fremont Aquifer and between the Fremont or Centerville-Fremont Aquifer and the Deep Aquifers.

The only exception to the general downward gradient from the Newark Aquifer to the underlying Centerville Aquifer is observed at a well cluster located at the southwest corner of the basin, near Plummer Creek. The wells were installed in late 2006 and early 2007, as part of the "Southwest Niles Cone Monitoring Wells Project," funded by the DWR local Groundwater Assistance Program Grant. The water elevation for the Newark Aquifer and Centerville Aquifer wells were 3.6 ft. and 6.3 ft. MSL, respectively, and the Fremont Aquifer and Deep Aquifer wells were all under artesian conditions. Efforts were made to measure water levels of the artesian wells during this program, and water levels of the Fremont

Aquifer well and the two Deep Aquifer wells were 10.5 ft., 13.4 ft. and greater than 19 ft. MSL, respectively.

The Newark Aquifer appears to be hydraulically connected to the bay in this area as indicated by the high chloride concentration (44,000 ppm) detected from the well. The deeper aquifers beneath the Newark Aquifer appear more confined. The well cluster is located south of Coyote Hills, near an area with relatively shallow bedrock. A historical test hole drilled at Dumbarton Point (in the vicinity of Highway 84 and Newark Slough) suggests that at depths below 200 feet, an older formation probably underlies the alluvium (DWR, 1967). Due to the limited data available in the area, the relationships between these deeper water-bearing zones, water levels observed at the well cluster, and aquifers east of Coyote Hills are unclear.

VII. WATER SAMPLE RESULTS

The chloride and TDS analytical results from Spring 2011 are in Appendix C. The chloride and TDS analytical results from Fall 2011 water samples are presented in Appendix D. Historically, chloride concentrations have been highest in the Newark Aquifer close to the bay, decreasing with depth to the Centerville-Fremont Aquifer, and again decreasing with depth to the Deep Aquifers. The Fall 2011 data confirmed that again the highest concentrations were from samples collected from Newark Aquifer wells. The wide range of concentrations reflects the influence of water from the recharge area at the east and the influence of higher salinity sources at the west. Also, the heterogeneous and anisotropic nature of the permeable sediments influences the complexity of the patterns seen on the contour maps.

ACWD has consistently analyzed water samples for chloride and occasionally analyzed them for additional inorganic and organic analyses. Chloride analysis is used to indicate saltwater intrusion since chloride makes up approximately 54% of total dissolved solids in sea water and it is conservative (non-reactive). The Secondary Maximum Contaminant Level range for chloride is 250 mg/l (recommended) to 500 mg/l (upper).

“TDS or Total Dissolved Solids is defined as the total amount of solids remaining when a water sample is evaporated to dryness... [and]...salinity means essentially the same as TDS” (Drever, 1988). “In principle, it is the sum of all dissolved constituents, with bicarbonate converted to equivalent carbonate” (Drever, 1988). The Secondary Maximum Contaminant Level range for TDS is 500 mg/l (recommended) to 1,000 mg/l (upper).

Water quality contours were produced by computer interpolation of the data and then manually modified based on contouring logic and also on historical information. The chloride and TDS contours were prepared primarily for groundwater protection purposes. Therefore, if multiple water quality results within a water-bearing zone were available for a given location, then the higher concentration was used to derive the contour lines.

A. Chloride Results

Fall 2011 chloride results are presented on maps for the AHF Aquifer and each of the BHF aquifers on Figures 8, 9, 10, and 11.

1. Comparison Between Fall 2011 and Fall 2010

Differences between the Fall 2011 chloride figures and the Fall 2010 figures can be best explained by the availability and accessibility of certain wells for sampling, and slight variations in chloride concentrations from year to year.

a. Above Hayward Fault Aquifer

Chloride and TDS data for the AHF Aquifer are presented on Figure 8. The AHF Aquifer has never been affected by saltwater intrusion because the Hayward Fault acts as a low permeability barrier between BHF aquifers and the AHF Aquifer. In general, the Fall 2011 chloride concentrations for the AHF Aquifer are approximately the same as the Fall 2010 chloride concentrations.

b. Newark Aquifer

The Newark Aquifer chloride figure for Fall 2011 is similar to the Fall 2010 figure. Newark Aquifer wells 4S/1W-19E002 and 4S/1W-30E004, located near the percolation ponds, have shown an improvement in water quality over the last twenty-six years (Figure 12). Chloride results from well 4S/1W-19E002 over the last eleven years have been consistently as low as those in the nearby recharge water (both close to 80 ppm chloride). Newark Aquifer well 5S/1W-05M001, located near Mowry Avenue west of I-880, also documents an improvement in water quality over the last 22 years; the chloride concentrations have decreased from a maximum of 11,500 ppm in 1989 to 3,000 ppm in 2011 (Figure 12).

Chloride and TDS concentrations for two Newark Aquifer wells are shown on Figure 9 and 18, but they were not used in the contouring process. Wells 5S/2W-11H002 (810 ppm chloride and 2,116 ppm TDS) and 5S/2W-02F004 (1,000 ppm chloride and 1,964 ppm TDS), both located near the bay, indicated chloride and TDS levels that were significantly lower than nearby wells. Some wells surrounding 5S/2W-02F004 and 5S/2W-11H002, including 5S/2W-11H002, are screened at two different depths within the Newark Aquifer. Differences in the screening intervals between wells may have contributed to the differences observed in water quality.

Total production from the ARP wells in the Newark Aquifer decreased this past year from a total of 1,322 acre-feet (AF) the previous year to 1,090 AF (Table 3 - beginning of October 2011 through September 2011). The pump at Site A (5S/1W-07J003) was not operational and the well was not pumped during 2011. In 2002, Cedar 2 (4S/1W-31N003) and Darvon 1 (4S/2W-36A006) were retrofitted in order to convert the wells into supply sources for the Newark Desalination Facility. Out of

the 1,090 AF of water produced from all Newark Aquifer ARP wells, 1,068 AF was used as a supply source for the Desalination Facility and 22 AF was used primarily for flushing and maintenance activities. Lowry (4S/2W-14N001) was turned on for sampling and maintenance purposes only.

c. Centerville-Fremont, Centerville, and Fremont Aquifers

The Centerville-Fremont Aquifer chloride figure for Fall 2011 is similar to the Fall 2010 figure. The bulge of brackish water inland of Fremont Boulevard near Mowry Avenue, as represented by wells 4S/1W-28P007 and 4S/1W-28F024, decreased slightly compared to the previous year as chloride concentrations decreased from 1,100 ppm and 250 ppm to 1,000 ppm and 190 ppm, respectively.

As part of the "Inland Saltwater Intrusion Monitoring Wells Project," funded by the DWR Local Groundwater Assistance Program Grant, eleven new wells were installed at different depths within the Centerville-Fremont Aquifer in 2009, to better define the extent and characteristic of the brackish water inland of Fremont Boulevard. Together with existing wells, six new well clusters were formed. Each cluster contained one well screened at depths between 190 to 270 feet (Centerville Aquifer) and one well screened at depths between 290 to 360 feet (Fremont Aquifer).

In general, chloride levels in the Centerville Aquifer are lower than chloride levels in the Fremont Aquifer, with the exception of an area extending from near Stevenson Boulevard and Blacow Road to AutoMall Parkway and Boyce Road. The highest chloride concentration (1,800 ppm) was detected in a Fremont Aquifer well 4S/1W-32N002, installed as part of the Inland Saltwater Intrusion Monitoring Wells Project. The chloride concentrations at the well have increased since its installation in 2009, from 1,240 ppm to 1,800 ppm. However, the trend was not observed inland of Fremont Boulevard where the chloride concentrations have been relatively stable during the same time period.

Improvements in water quality over the last 30 years in the Centerville-Fremont Aquifer were observed in wells near the percolation ponds, 4S/1W-19L002 and 4S/1W-19N003 (Figure 13). Well 4S/1W-29J003 also has shown an overall improvement in water quality; however, beginning in 1986, chloride concentrations have increased slightly, but have stabilized at approximately 123 ppm. Samples were not collected during 2011 because the well was not running during the Spring and Fall programs. However, a nearby Centerville-Fremont well, 4S/1W-29H002, documented a chloride concentration of 110 ppm during the 2010 and 2011 Fall programs.

Centerville-Fremont ARP well production increased from a total of 5,954 AF the previous year to 10,774 AF this year. Cedar 1 (4S/1W-31N001) and Darvon 2 (4S/2W-36A007) were retrofitted in 2002 as supply sources for the Newark Desalination Facility. As part of the expansion of the Newark Desalination Facility, Bellflower (5S/1W-06H004) and Farwell (5S/1W-05C001) ARP wells were also

retrofitted in 2009 to become supply sources to the facility. As permeate production capability increased from 5 mgd to 10 mgd, total blended production was increased to up to 12.5 mgd. Out of the 10,774 AF of water produced from all Centerville-Fremont Aquifer ARP wells, 10,746 AF was used as a supply source for the Desalination Facility, and 28 AF was pumped primarily for flushing and maintenance activities.

d. Deep Aquifers

During the Fall 2011 program, the highest chloride concentration in the Deep Aquifers was detected from well 4S/2W-09F014 (670 ppm) located west of I-880 next to Old Alameda Creek. The well is located near former salt ponds where a number of abandoned water wells have been identified. These abandoned wells could have allowed saline water from either the salt ponds or the Newark Aquifer to enter into the Deep Aquifers. The former salt ponds are currently being restored into tidal wetlands as part of the South Bay Salt Pond Restoration Project. Since 2002, ACWD has worked with project proponents to locate and destroy abandoned wells within the project area. As of May 2007, a total of 68 wells were identified in the area near well 4S/2W-9F014, and 43 of the 68 wells were located and destroyed. Attempts to locate the remaining 25 wells have been unsuccessful; most of these wells are believed to be located within Old Alameda Creek or beneath channel levees. ACWD will continue to oversee the proper destruction of any abandoned wells discovered in the area.

Field efforts were successfully coordinated with the City of Hayward to sample the City's Emergency Production Wells B, C, and E. Chloride concentrations detected from the Hayward wells ranged from 44 ppm to 180 ppm.

Increases in chloride concentrations in the Deep Aquifers were observed at wells 4S/2W-25D001 and 4S/2W-13P005, located west of Decoto Road, in the last 10 to 20 years. At 4S/2W-25D001, chloride concentration increased from 46 ppm in 1990 to 330 in 2011; and, at 4S/2W-13P005, chloride concentration increased from 260 ppm in 2000 to 560 ppm in 2011. Chloride concentrations detected during Fall 2011 are the same as those detected during Fall 2010 for both Deep Aquifer wells.

Historically, a pocket of chloride concentrations greater than 500 ppm is reported in an area just west of Central Avenue and Cherry Street in the vicinity of industrial well 5S/2W-12B009. However, because well 5S/2W-12B009 was reportedly damaged and could not be sampled, and no other Deep Aquifer wells were in operation in the vicinity during the Fall Program, elevated chloride concentrations were not reported in the area this year. In order to keep track of the elevated pocket of chloride, a dashed 250 ppm chloride contour is added to Figures 11 and 17, and a dashed 750 ppm TDS contour is added to Figure 20. The dashed contours were reproduced from the 2010 Groundwater Monitoring Report (ACWD, 2011).

Improvement in water quality over the last 20 to 30 years were observed in the Deep Aquifers just south and southwest of the percolation ponds as exhibited by the water

quality history from wells 4S/1W-29L012, 4S/1W-30E003, and 4S/1W-31J001 (Figure 14). Chloride results collected from well 4S/1W-29L012 have been relatively consistent for 20 years at approximately 130 ppm; however, from 2004 to 2008, the average chloride concentration has increased slightly to 142 ppm. Well 4S/1W-29L012 has not been sampled since 2008 due to access issues. The well is scheduled to be retrofitted with a new sampling tube and wellhead in 2012.

There was no ARP well production from the Deep Aquifers this past year. The only Deep Aquifer ARP well, Willowood 1 (4S/1W-31B003), has not been in operation since August 2001.

2. Comparison Between Fall 2011 and Fall 1962

Since 1962, ACWD has recharged the BHF sub-basin through percolation ponds with local runoff and purchased water; however, under normal year conditions, purchased water is only applied to the AHF sub-basin. As a result, water levels in the Newark Aquifer have increased, restoring the bayward direction of groundwater flow and also creating a source of high quality water. This water mound has moved the 250 ppm contour line away from ACWD's Mowry Wellfield. A comparison between Fall 1962 and Fall 2011 chloride contours is shown for the three aquifers on Figures 15, 16, and 17.

Changes in chloride concentrations in the BHF sub-basin can be approximated by comparing the 250 ppm contour lines constructed for Fall 1962 and Fall 2011. Improvement in water quality in the Newark Aquifer is demonstrated by a decrease in chloride concentrations from the Hayward Fault to the west of Fremont Boulevard (Figure 15). A comparison between Fall 1962 and Fall 2011 at the southern and northern ends of the sub-basin could not be made due to a lack of data.

A comparison between Fall 1962 and Fall 2011 250 ppm contour lines in the Centerville-Fremont Aquifer (Figure 16) indicates: a decrease in chloride levels in the percolation ponds area to beyond Fremont Boulevard, a decrease in chloride levels in a small southwest portion of the sub-basin near Cherry Street, and an increase in chloride levels in areas west and east of the Fall 1962 250 ppm contour line. An increase in area, as defined by the 250 ppm contour line near Mowry Avenue and Paseo Padre Parkway, is of special significance due to its proximity to the Mowry Wellfield.

A comparison between Fall 1962 and Fall 2011 250 ppm contour lines in the Deep Aquifers (Figure 17) indicates: an apparent decrease in chloride levels in the vicinity of the percolation ponds, an increase in chloride levels in the area northwest of the Fall 1962 250 ppm contour line, an increase in chloride levels in a small area southwest of Cherry Street near Central Avenue, and a decrease in chloride levels in an isolated area in the center of the basin. The area of decrease in chloride levels in the center of the basin expanded slightly in the northeastern direction this year compared to the previous year because the chloride concentration in Deep Aquifer well 4S/1W-30E003 decreased from 260 ppm to 190 ppm (Figures 11 and 14). The increase in chloride levels in the northwestern portion of the basin is interpreted as extending from Decoto Road to

Highway 92, based on samples collected from monitoring wells installed in 2005 as part of the Northwest Niles Cone Monitoring Wells Project funded by the DWR local Groundwater Assistance Program Grant. However, it is unknown exactly when elevated chloride levels first appeared in this area of the basin.

In general, recharging the groundwater basin with watershed runoff and imported water since 1962 has decreased the chloride content near the percolation ponds and some distance toward the bay in all three aquifers, but especially in the Newark Aquifer. The increase in chloride concentrations in both the Centerville-Fremont and the Deep Aquifers surrounding the Fall 1962 areas may be due to mixing between highly saline water (>250 ppm) with less saline water (<250 ppm) as infiltration from the recharge area dilutes and disperses the saline water. It may also be due to vertical movement of saline water from other aquifers through poorly constructed wells or natural weaknesses in the aquitards or both.

B. Total Dissolved Solids Sample Results

The Fall 2011 TDS results are presented on maps for the Above Hayward Fault (AHF) Aquifer and each of the BHF aquifers on Figures 8, 18, 19, and 20. TDS concentrations in the AHF Aquifer in the Peralta-Tyson Wellfield ranged between 472 ppm and 597 ppm, which is slightly lower than the previous year's range of 492 ppm and 604 ppm. TDS concentrations have historically been higher near Lake Elizabeth as indicated by well 4S/1W-34C001 at 1,074 ppm. Since 2000, the average TDS concentration detected at the well is approximately 1,155 ppm.

The 1,000 ppm contour line for TDS in the Newark Aquifer (Figure 18) appears to have the general shape of the 250 ppm chloride line (Figure 9). Two Newark Aquifer wells at the Mowry Wellfield were sampled and up to 542 ppm of TDS was detected during Fall 2011. Since 2000 (when ACWD first produced TDS contour figures), TDS concentrations have ranged from 400 to 650 ppm.

In the Centerville-Fremont and Deep Aquifers, the 750 ppm contour lines for TDS (Figures 19 and 20) both appear to have roughly similar shapes as the 250 ppm chloride lines (Figures 10 and 11, respectively). In the southeastern portion of the BHF sub-basin, the 750 ppm contour line for TDS could not be inferred with the data available for the Centerville-Fremont Aquifer; however, the 1,000 ppm contour line for TDS in that area appears to follow the general shape of the 250 ppm chloride line. Similar to the chloride results, elevated levels of TDS (exceeding 1,000 ppm) in the Centerville-Fremont Aquifer were detected inland of Fremont Boulevard near Mowry Avenue, south of the Mowry Wellfield. Since 2000, TDS concentrations for the Centerville-Fremont and Deep Aquifers have been greater than 500 ppm, but less than 1,000 ppm in the Mowry Wellfield.

VIII. CONCLUSIONS

In general, compared to levels observed during Fall 2010, groundwater levels are higher during Fall 2011 in the AHF Aquifer and BHF aquifers. Water levels in the AHF indicator well documented record high levels in June 2011. Overall, pumping from the Centerville-Fremont Aquifer at the Mowry Wellfield has decreased as groundwater pumping for the Newark Desalination Facility increased. Pumping from the Newark Aquifer has decreased from both the Newark Desalination Facility supply wells and ARP wells.

Groundwater in the AHF Aquifer flows toward the Peralta-Tyson Wellfield with an average gradient of approximately 0.003 ft./ft. Groundwater in the Newark Aquifer flows radially from the recharge area outward to the northwest, west, southwest, and south and locally toward the Mowry Wellfield; the regional horizontal component of the groundwater gradient is approximately 0.0005 ft./ft. Groundwater in the Centerville-Fremont Aquifer flows inward toward the vicinity of Cherry Street and Central Avenue near the vicinity of the Aquifer Reclamation Program wells Darvon 2 (4S/2W-36A007), Cedar 1 (4S/1W-31N001), Bellflower (5S/1W-06H004), Farwell (5S/1W-05C001) and industrial well 5S/2W-12B020 with variable horizontal gradients of approximately 0.0009 ft./ft. Historically, groundwater also flows radially towards the Mowry Wellfield; however, this was not observed during the Fall 2011 program, because none of the production wells that are screened specifically in the Centerville-Fremont Aquifer were running at the time water levels were measured at the wellfield. Groundwater in the Deep Aquifers flows from the recharge area locally toward the Mowry Wellfield and toward municipal/recreational wells 4S/2W-26H001 and 4S/2W-36D003.

Chloride concentration contours for Fall 2011 are similar to those of Fall 2010 in both the AHF and BHF aquifers. Chloride concentrations at well 4S/1W-28F024, located between the Mowry Wellfield and the bulge of brackish water inland of Fremont Boulevard, decreased from 250 ppm to 190 ppm, which is the lowest level since the installation of the well in 2007. The relatively small differences in the chloride contours between the two years are best explained by the availability and accessibility of certain wells for sampling, and variations in chloride concentrations from year to year.

Water quality data collected from newly constructed monitoring wells have enhanced the characterization of groundwater quality in the basin, and contributed to variations in chloride contour patterns from year to year. In order to understand changes in water quality over several years, it is best to interpret water sample results from individual wells. In general, Figures 12, 13, and 14 indicate that water quality in all three aquifers below the fault are improving over the last 15 to 30 years.

Recharging the groundwater basin with watershed runoff and imported water since 1962 has decreased the chloride content near the percolation ponds and some distance toward the bay in all three aquifers, but especially in the Newark Aquifer. An increase in chloride concentrations in both the Centerville-Fremont and the Deep Aquifers is seen surrounding the affected areas indicated during Fall 1962. This increase in area may be due to mixing between highly saline water (>250 ppm) with less saline water (<250 ppm) as infiltration from the recharge area dilutes

and disperses the saline water. It may also be due to vertical movement of saline water from other aquifers through poorly constructed wells or natural weaknesses in the aquitards or both.

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APPENDIX A

TABLES

TABLE 1

FALL 2011 GROUNDWATER MONITORING PROGRAM SUMMARY

GROUPING OF WELLS	NUMBER OF WELLS
WELLS SAMPLED (METHOD OF SAMPLING)	
Owner's Pump	21
Wells With Air Compressor	144
ACWD's Dedicated Pump	21
TOTAL WELLS SAMPLED*	**186**
WELLS SAMPLED, BUT UNABLE TO MEASURE WATER LEVEL	19
WELLS THAT WERE MEASURED FOR WATER LEVELS	241
TOTAL WELLS SAMPLED OR MEASURED	**260**
WELLS THAT COULD NOT BE SAMPLED OR MEASURED	
Existing Wells	22
Wells Destroyed	0
TOTAL WELLS NOT SAMPLED OR MEASURED	**22**
TOTAL NUMBER OF WELLS IN THE PROGRAM	**282**

*WELLS SAMPLED BY AQUIFER

Newark Aquifer	67
Centerville-Fremont Aquifer	71
Deep Aquifer	34
Above Hayward Fault Aquifer	14
TOTAL IN ALL AQUIFERS	**186**

TABLE 2
GROUNDWATER MONITORING PROGRAM FALL 2011
VERTICAL GRADIENTS AT
SELECTED CLUSTERED WELLS

Well Number	Aquifer	Water Depth (feet)	Ref Point Elevation (feet)	Water Elevation (feet)	Screen Pack (feet)	Center of Screen (feet)	Vertical Gradient	Direction	Chloride (ppm)	TDS (ppm)
4S/1W-20R003	**N**	40.0	59.11	19.1	38.0-58.0	48	-0.054	▼	NA	NA
4S/1W-20R004	**N**	41.8	59.20	17.4	74.5-84.5	79.5	-0.034	▼	NA	NA
4S/1W-20R005	**N**	42.7	59.06	16.4	105.0-115.0	110	---	---	NA	NA
5S/1W-05H006	**N**	21.7	34.29	12.6	50-80	65	-0.108	▼	160	1,108
5S/1W-05H005	**C**	41.1	34.31	-6.8	230-260	245	0.004	▲	800	1,664
5S/1W-05H004	**F**	40.7	34.25	-6.5	330-340	335	0.013	▲	35	388
5S/1W-05H003	**D**	39.1	34.31	-4.8	450-480	465	---	---	34	363
4S/1W-28P008	**N**	40.4	53.53	13.1	60-100	80	-0.157	▼	88	692
4S/1W-28P004	**C**	59.3	53.56	-5.7	190-210	200	-0.014	▼	88	670
4S/1W-28P007	**F**	61.4	53.50	-7.9	330-340, 350-380	355	0.006	▲	1,000	2,136
4S/1W-28P006	**D**	61.0	53.66	-7.3	430.0-460.0	445	---	---	190	608
4S/2W-13P004	**N**	12.0	25.90	13.9	48-58, 68-78	63	-0.096	▼	110	616
4S/2W-13P007	**C**	28.6	26.00	-2.6	180-290	235	-0.002	▼	140	715
4S/2W-13P006	**F**	29.0	26.15	-2.9	340-360	350	-0.011	▼	210	700
4S/2W-13P005	**D**	29.5	25.98	-3.5	400-420	410	---	---	560	1,138
4S/2W-36N012	**N**	4.6	15.86	11.3	50-70, 90-110	80	-0.186	▼	6,200	11,850
4S/2W-36N011	**C**	29.5	17.50	-12.0	190-220	205	0.055	▲	380	920
4S/2W-36N010	**F**	23.8	16.77	-7.0	280-310	295	---	---	1,200	2,006
4S/2W-25D003	**N**	9.9	22.99	13.1	50-90, 122-142	96	-0.087	▼	230	1,394
4S/2W-25D002	**CF**	27.6	23.47	-4.1	274-314	294	-0.011	▼	470	1,110
4S/2W-25D001	**D**	28.7	22.23	-6.5	486.5-516.5	501.5	---	---	330	787
4S/1W-19N014	N	25.6	40.5	14.9	60.0-100.0	80	-0.134	▼	84	439
4S/1W-19N005	C	43.7	40.55	-3.2	200.0-230.0	215	-0.013	▼	69	424
4S/1W-19N004	F	44.8	40.68	-4.1	270.0-310.0	290	0.004	▲	260	730
4S/1W-19N002	D	44.2	40.45	-3.8	370.0-410.0	390	---	---	480	1,216

N = Newark, C = Centerville, F = Fremont, CF = Centerville - Fremont, D = Deep

TABLE 3

AQUIFER RECLAMATION PROGRAM WELL PRODUCTION

WELL NAME	OCTOBER 2008 THROUGH SEPTEMBER 2009 (ACRE-FEET)	OCTOBER 2009 THROUGH SEPTEMBER 2010 (ACRE-FEET)	OCTOBER 2010 THROUGH SEPTEMBER 2011 (ACRE-FEET)
NEWARK AQUIFER			
CEDAR 2 (ARP)	17	71	17
CEDAR 2 (Desal)	597	124	1,068
DARVON 1 (ARP)	23	443	3
DARVON 1 (Desal)	0	0	0
LOWRY	2	2	2
SITE A	1	682	0
SITE B	0	0	0
SITE C	0	0	0
SITE D	0	0	0
SITE E	0	0	0
Supply for Desalination Facility Subtotal	**597**	**124**	**1,068**
ARP Pumping Subtotal	**43**	**1,198**	**22**
Aquifer Total	**640**	**1,322**	**1,090**
CENTERVILLE FREMONT AQUIFER			
BELLFLOWER (ARP)	68	2,448	22
BELLFLOWER (Desal)	---	186	2,641
CEDAR 1 (ARP)	68	383	1
CEDAR 1 (Desal)	2,198	641	2,885
DARVON 2 (ARP)	22	708	5
DARVON 2 (Desal)	3,406	218	2,987
FARWELL (ARP)	53	1,276	0
FARWELL (Desal)	---	94	2,233
WILLOWOOD 2	1	0	0
Supply for Desalination Facility Subtotal	**5,604**	**1,139**	**10,746**
ARP Pumping Subtotal	**212**	**4,815**	**28**
Aquifer Total	**5,816**	**5,954**	**10,774**
DEEP AQUIFER			
WILLOWOOD 1	**0**	**0**	**0**
Aquifer Total	**0**	**0**	**0**
TOTAL FROM ALL AQUIFERS			
Supply for Desalination Facility	**6,201**	**1,263**	**11,814**
ARP Pumping	**255**	**6,013**	**50**
Total Pumping	**6,456**	**7,276**	**11,864**

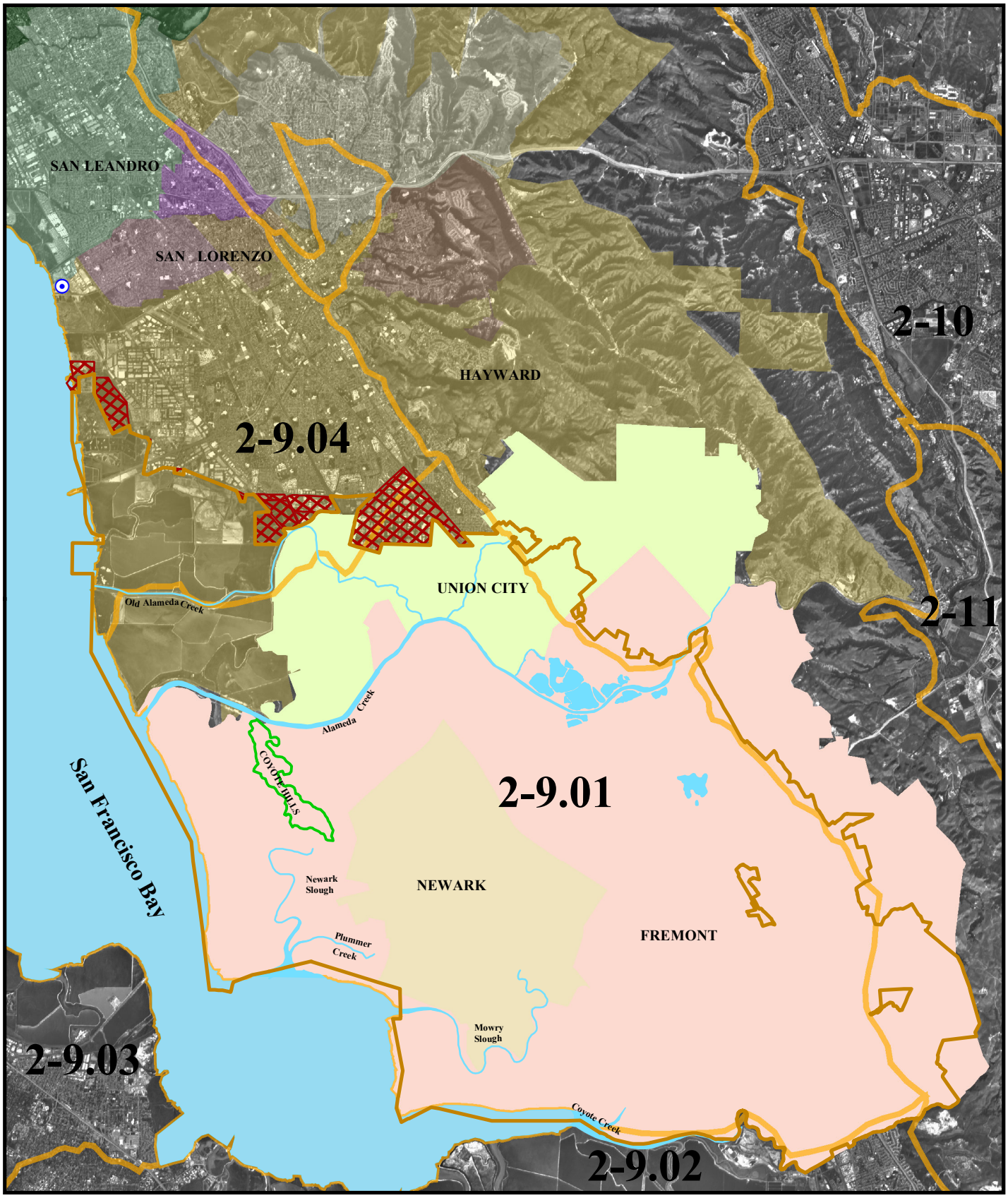
ARP = Aquifer Reclamation Program Pumping

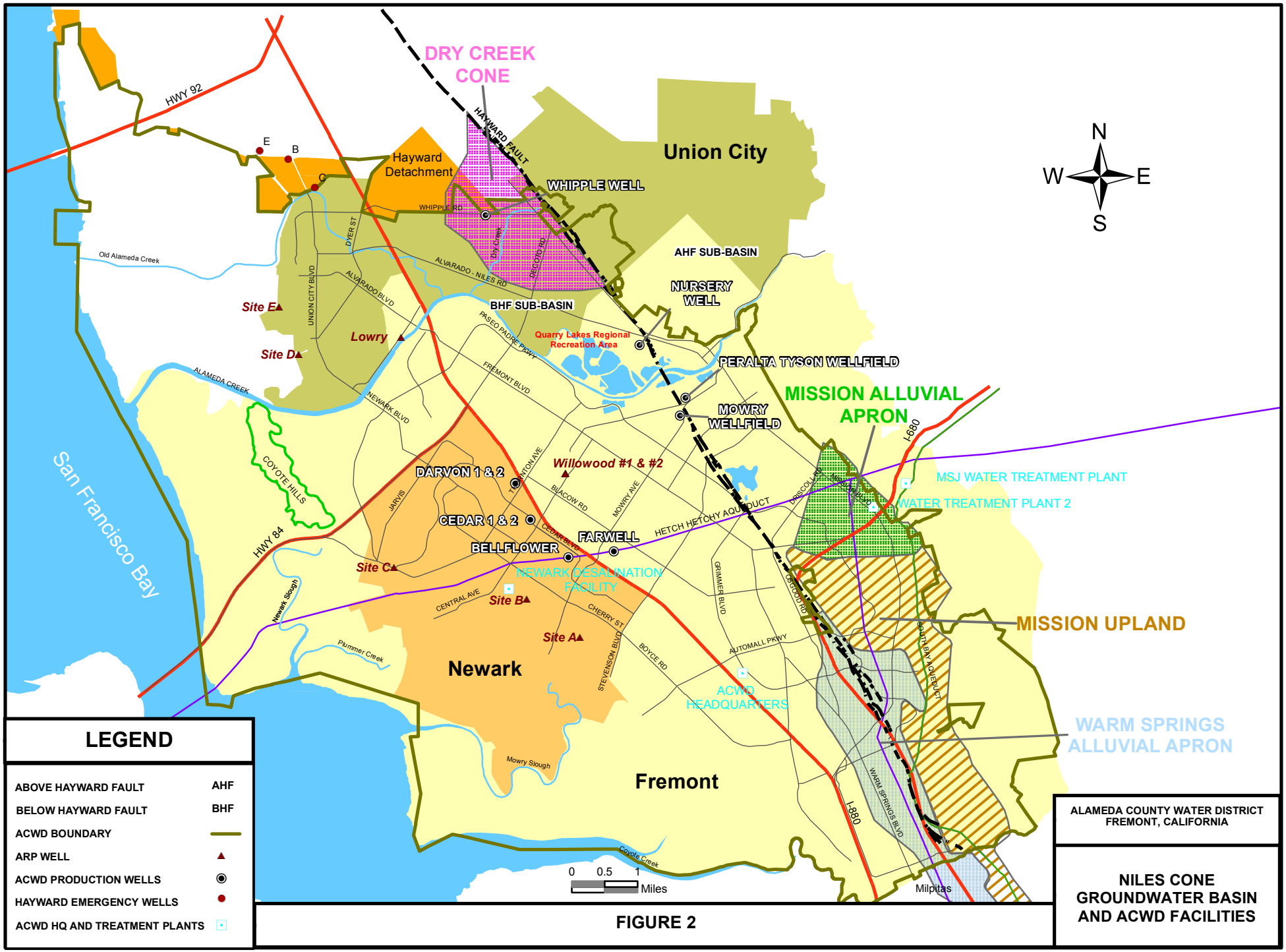
Desal = Source Supply for Newark Desalination Facility

APPENDIX B

FIGURES

FIGURE 1: LOCAL AGENCY BOUNDARIES

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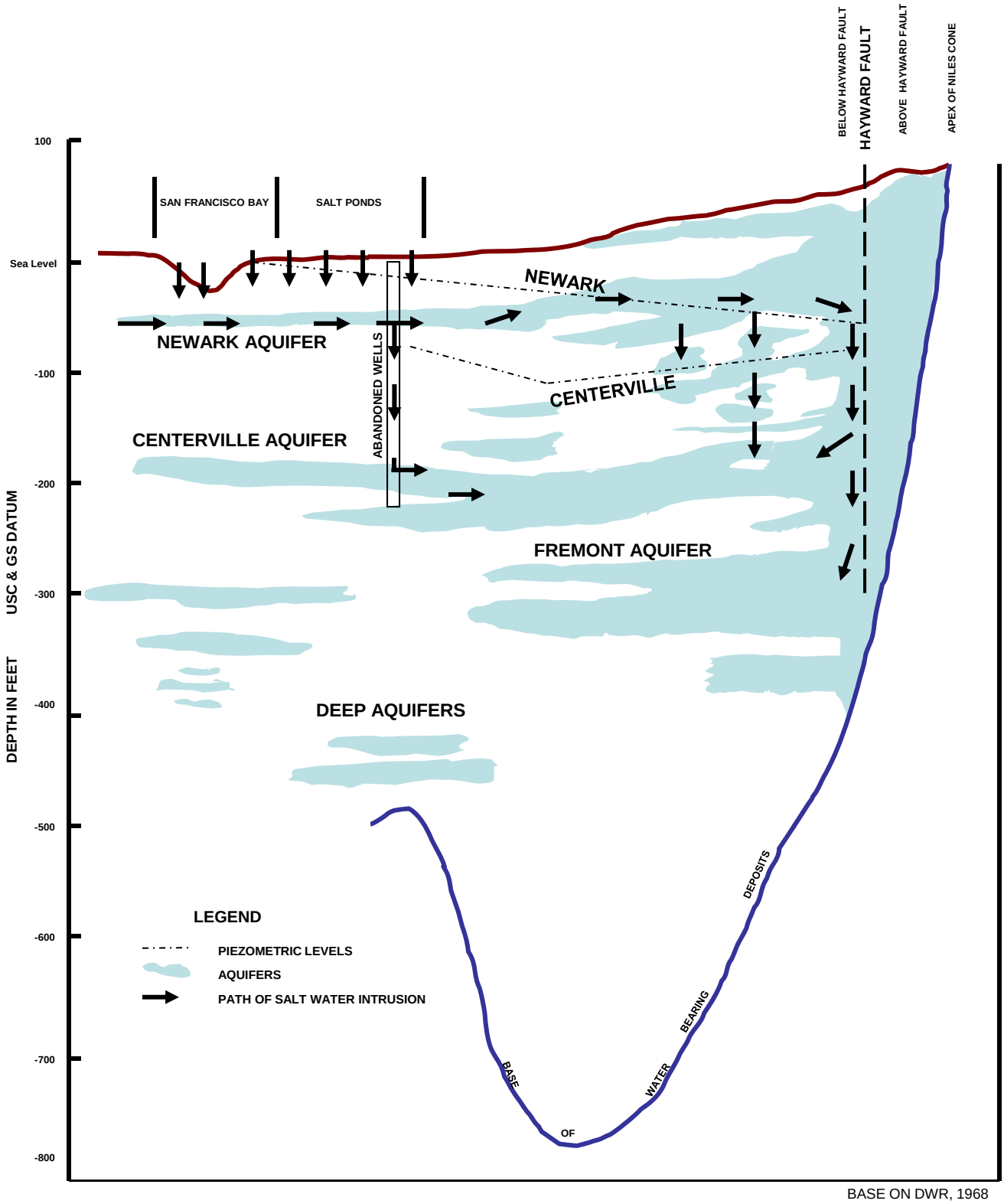
HAYWARD FAULT
Union City
Hayward Detachment
WHIPPLE WELL
WHIPPLE RD
HWY 92
E
B
C
Old Alameda Creek
DYER ST
UNION CITY BLVD
ALVARADO BLVD
ALVARADO - NILES RD
DESOTO RD
Dry Creek
AHF SUB-BASIN
NURSERY WELL
BHF SUB-BASIN
Site E
Lowry
Site D
PASEO PADRE PKWY
Quarry Lakes Regional Recreation Area
PERALTA TYSON WELLFIELD
FREMONT BLVD
NEWARK BLVD
ALAMEDA CREEK
MOWRY WELLFIELD
MISSION ALLUVIAL APRON
I-680
COYOTE HILLS
DARVON 1 & 2
TURNTON AVE
Willowood #1 & #2
BLACOW RD
MOWRY AVE
MSJ WATER TREATMENT PLANT
WATER TREATMENT PLANT 2
DISCOVERY BAY BLVD
JARVIS
CEDAR 1 & 2
CEDAR BLVD
FARWELL
HETCH HETCHY AQUEDUCT
BELLFLOWER
HWY 84
Site C
NEWARK DESALINATION FACILITY
GRIMMER BLVD
DESOTO RD
MISSION UPLAND
Newark Slough
CENTRAL AVE
Site B
CHERRY ST
Site A
Plummer Creek
Newark
STEVENSON BLVD
BOYCE RD
AUTOMALL PKWY
SOUTH BAY AQUEDUCT
ACWD HEADQUARTERS
WARM SPRINGS ALLUVIAL APRON
Mowry Slough
Fremont
I-880
WARM SPRINGS BLVD
Coyote Creek
Milpitas
San Francisco Bay
N
W
E
S
0 0.5 1
Miles
LEGEND
ABOVE HAYWARD FAULT AHF
BELOW HAYWARD FAULT BHF
ACWD BOUNDARY
ARP WELL
ACWD PRODUCTION WELLS
HAYWARD EMERGENCY WELLS
ACWD HQ AND TREATMENT PLANTS
ALAMEDA COUNTY WATER DISTRICT
FREMONT, CALIFORNIA
NILES CONE GROUNDWATER BASIN AND ACWD FACILITIES

FIGURE 2



BASE ON DWR, 1968

INTRUSION OF SALT WATER INTO THE FREMONT STUDY AREA
FIGURE 3

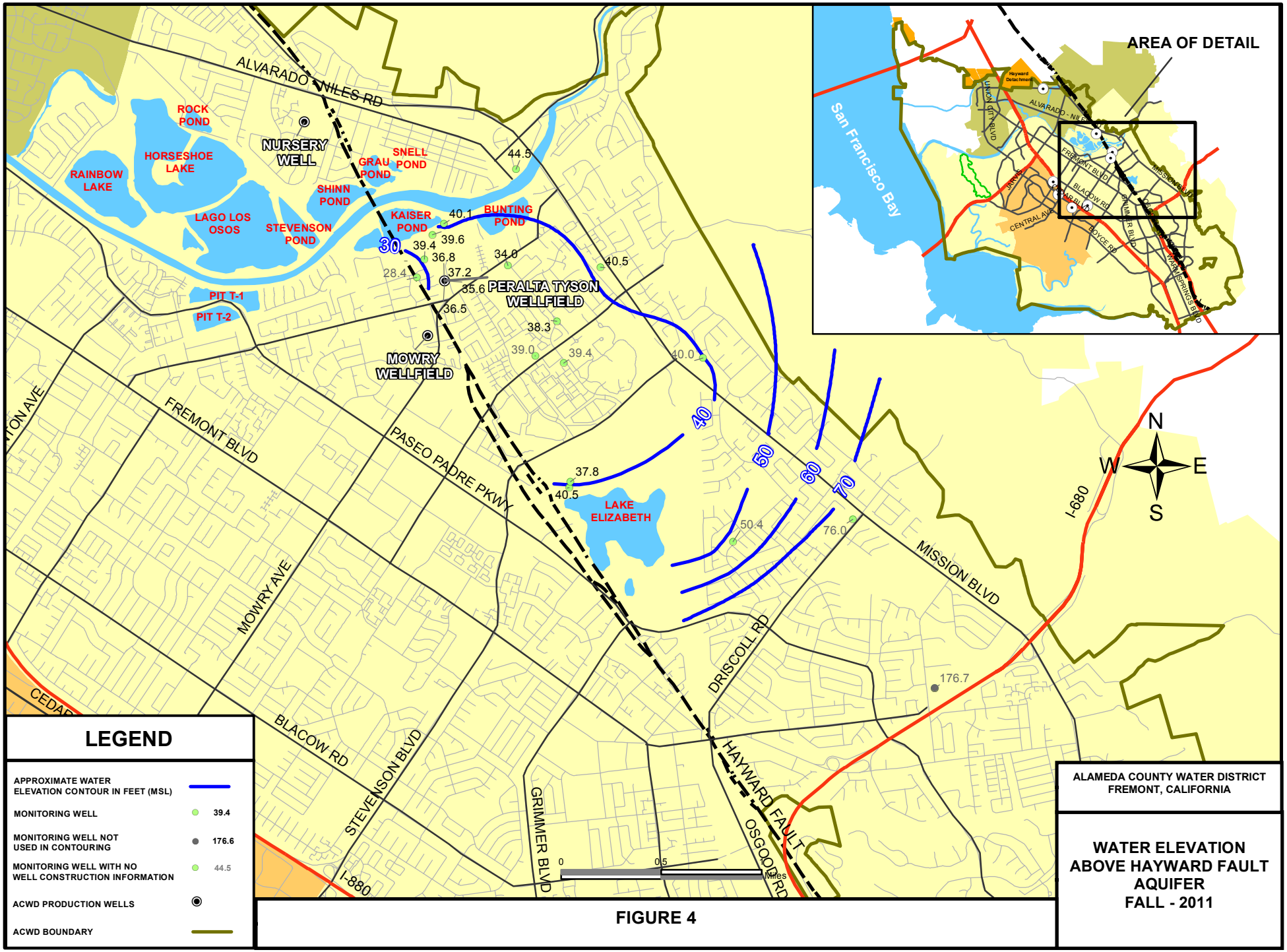

AREA OF DETAIL
San Francisco Bay
ALVARADO NILES RD
ROCK POND
HORSESHOE LAKE
RAINBOW LAKE
LAGO LOS OSOS
STEVENSON POND
NURSERY WELL
SHINN POND
GRAU POND
SNELL POND
KAISER POND
BUNTING POND
PERALTA TYSON WELLFIELD
PIT T-1
PIT T-2
MOWRY WELLFIELD
LAKE ELIZABETH
FREMONT BLVD
PASEO PADRE PKWY
MOWRY AVE
BLACOW RD
STEVENSON BLVD
GRIMMER BLVD
DRISCOLL RD
MISSION BLVD
HAYWARD FAULT
OSGOOD RD
I-680
I-880
30
40
50
60
70
44.5
40.1
39.4
39.6
36.8
34.0
28.4
37.2
35.6
36.5
38.3
39.0
39.4
40.0
40.5
37.8
40.5
50.4
76.0
176.7
N
W
E
S
0
0.5
Miles
LEGEND
APPROXIMATE WATER ELEVATION CONTOUR IN FEET (MSL)
MONITORING WELL
39.4
MONITORING WELL NOT USED IN CONTOURING
176.6
MONITORING WELL WITH NO WELL CONSTRUCTION INFORMATION
44.5
ACWD PRODUCTION WELLS
ACWD BOUNDARY
ALAMEDA COUNTY WATER DISTRICT
FREMONT, CALIFORNIA
WATER ELEVATION
ABOVE HAYWARD FAULT
AQUIFER
FALL - 2011

FIGURE 4

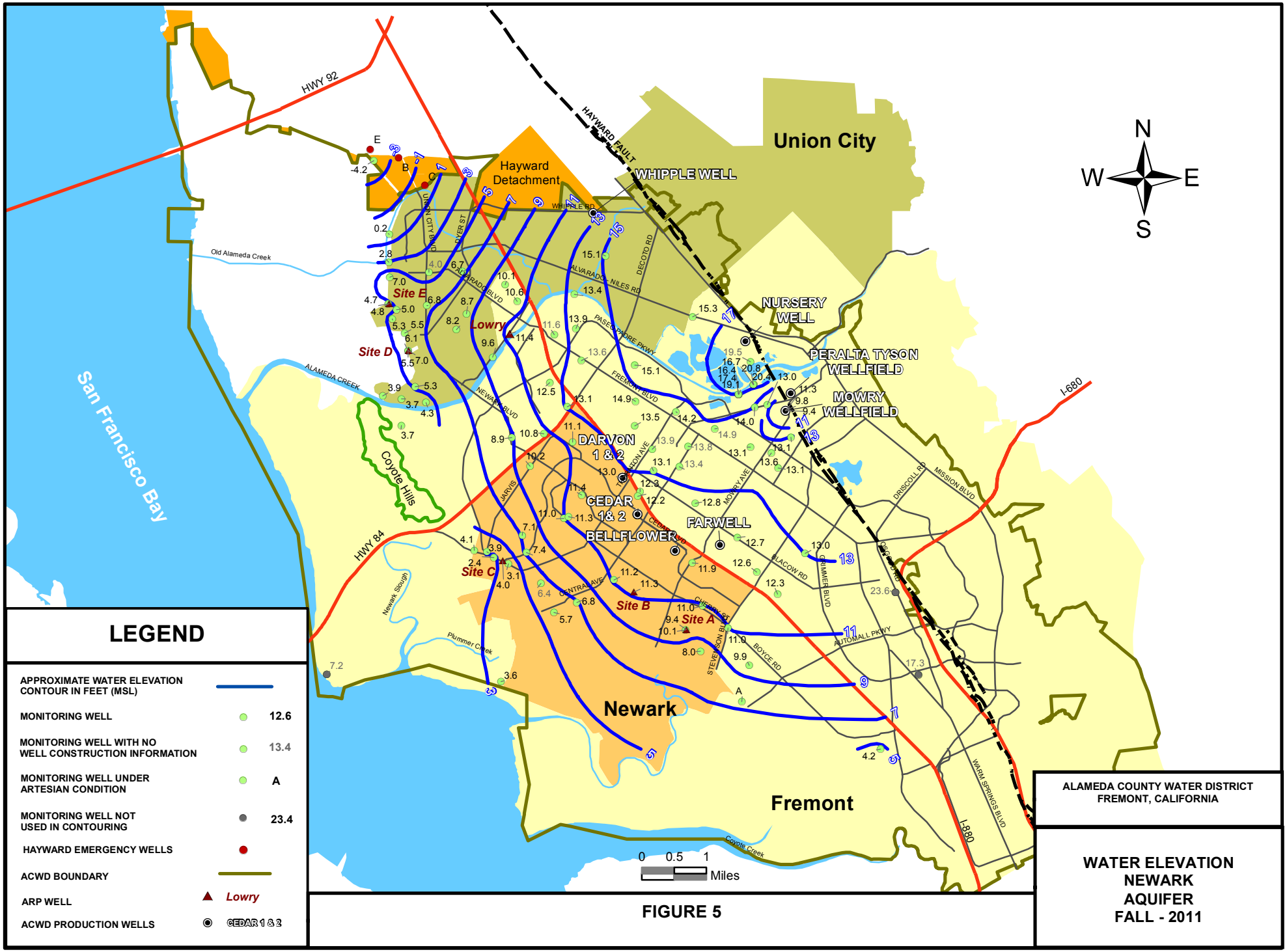
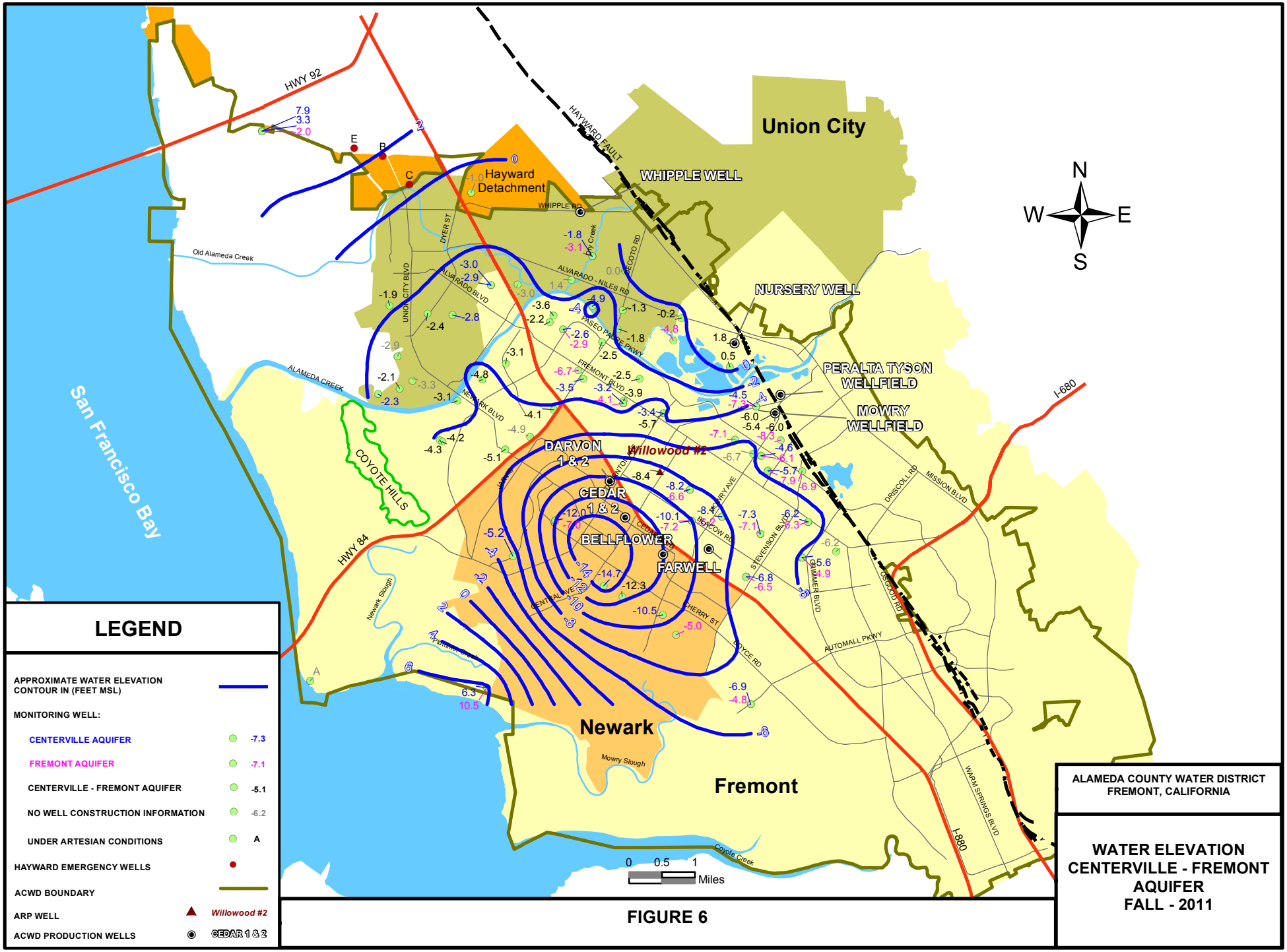


FIGURE 5

ALAMEDA COUNTY WATER DISTRICT
FREMONT, CALIFORNIA

WATER ELEVATION
NEWARK
AQUIFER
FALL - 2011



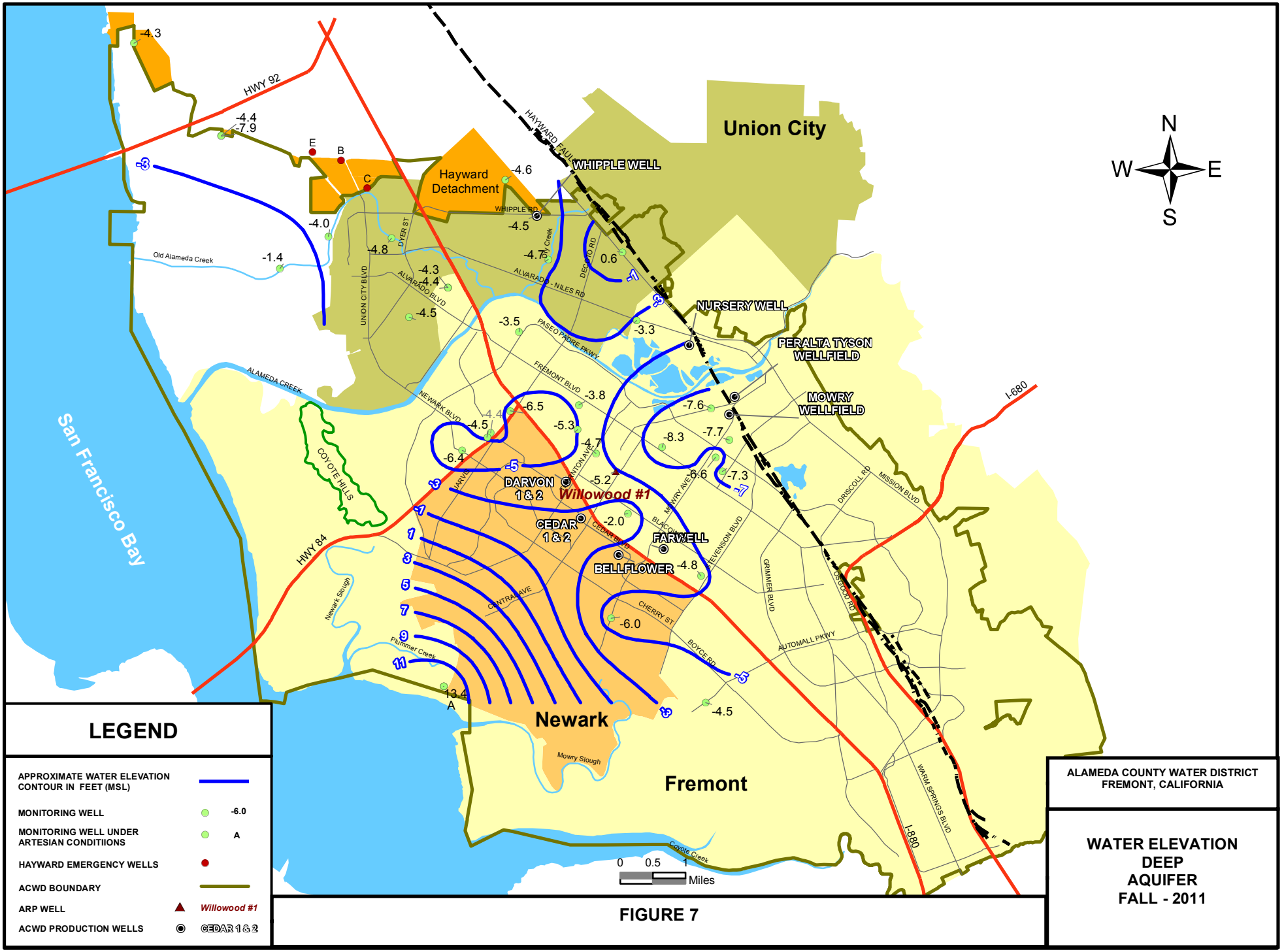
LEGEND

- APPROXIMATE WATER ELEVATION CONTOUR IN (FEET MSL)
- MONITORING WELL:
  - CENTERVILLE AQUIFER -7.3
  - FREMONT AQUIFER -7.1
  - CENTERVILLE - FREMONT AQUIFER -5.1
  - NO WELL CONSTRUCTION INFORMATION -6.2
  - UNDER ARTESIAN CONDITIONS A
- HAYWARD EMERGENCY WELLS
- ACWD BOUNDARY
- ARP WELL Willowood #2
- ACWD PRODUCTION WELLS CEDAR 1&2

ALAMEDA COUNTY WATER DISTRICT
FREMONT, CALIFORNIA

WATER ELEVATION CENTERVILLE - FREMONT AQUIFER FALL - 2011

FIGURE 6



LEGEND

- APPROXIMATE WATER ELEVATION CONTOUR IN FEET (MSL)
- MONITORING WELL -6.0
- MONITORING WELL UNDER ARTESIAN CONDITIIONS A
- HAYWARD EMERGENCY WELLS
- ACWD BOUNDARY
- ARP WELL Willowood #1
- ACWD PRODUCTION WELLS CEDAR 1&2

FIGURE 7

ALAMEDA COUNTY WATER DISTRICT
FREMONT, CALIFORNIA

WATER ELEVATION DEEP AQUIFER FALL - 2011

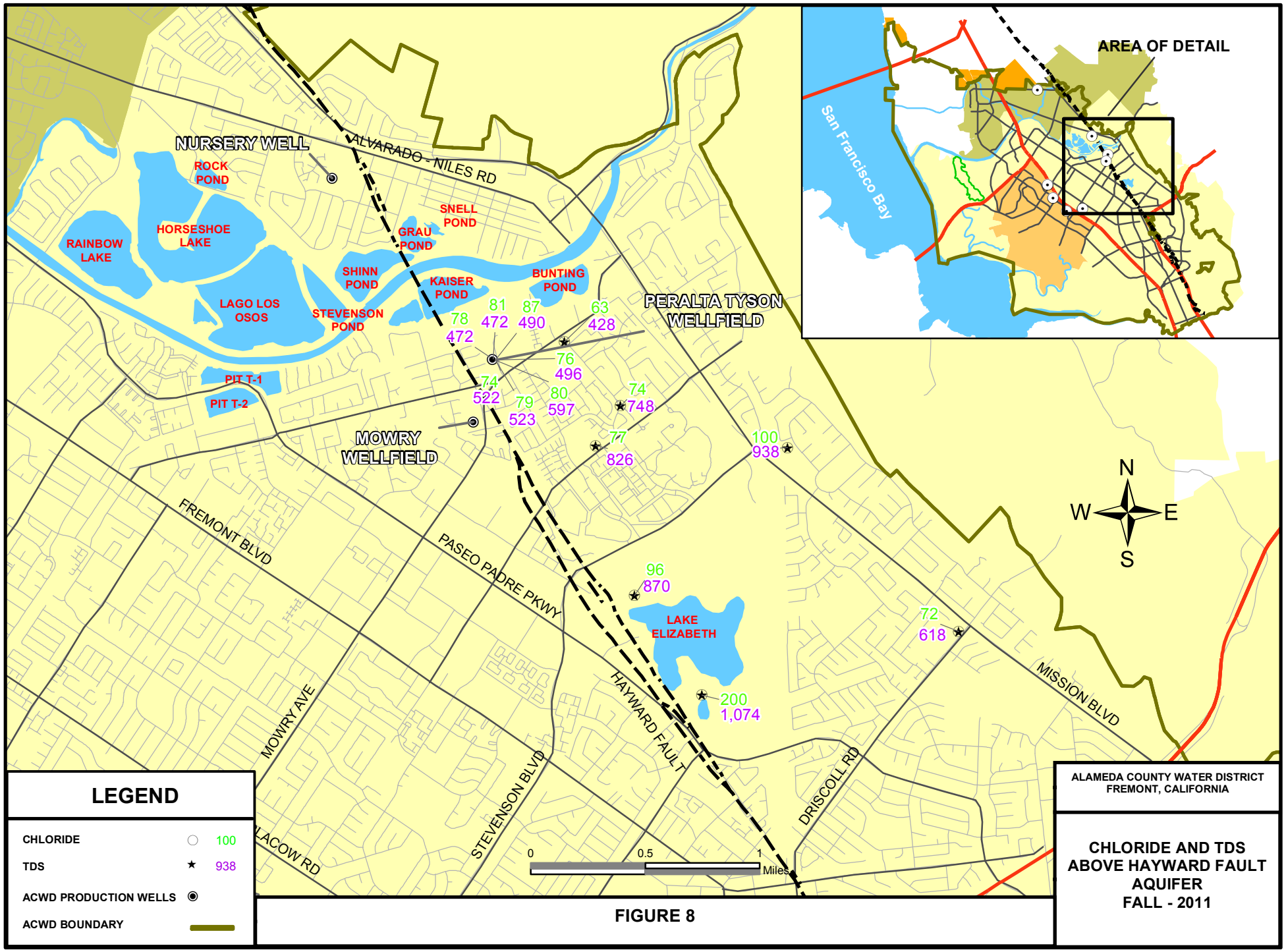
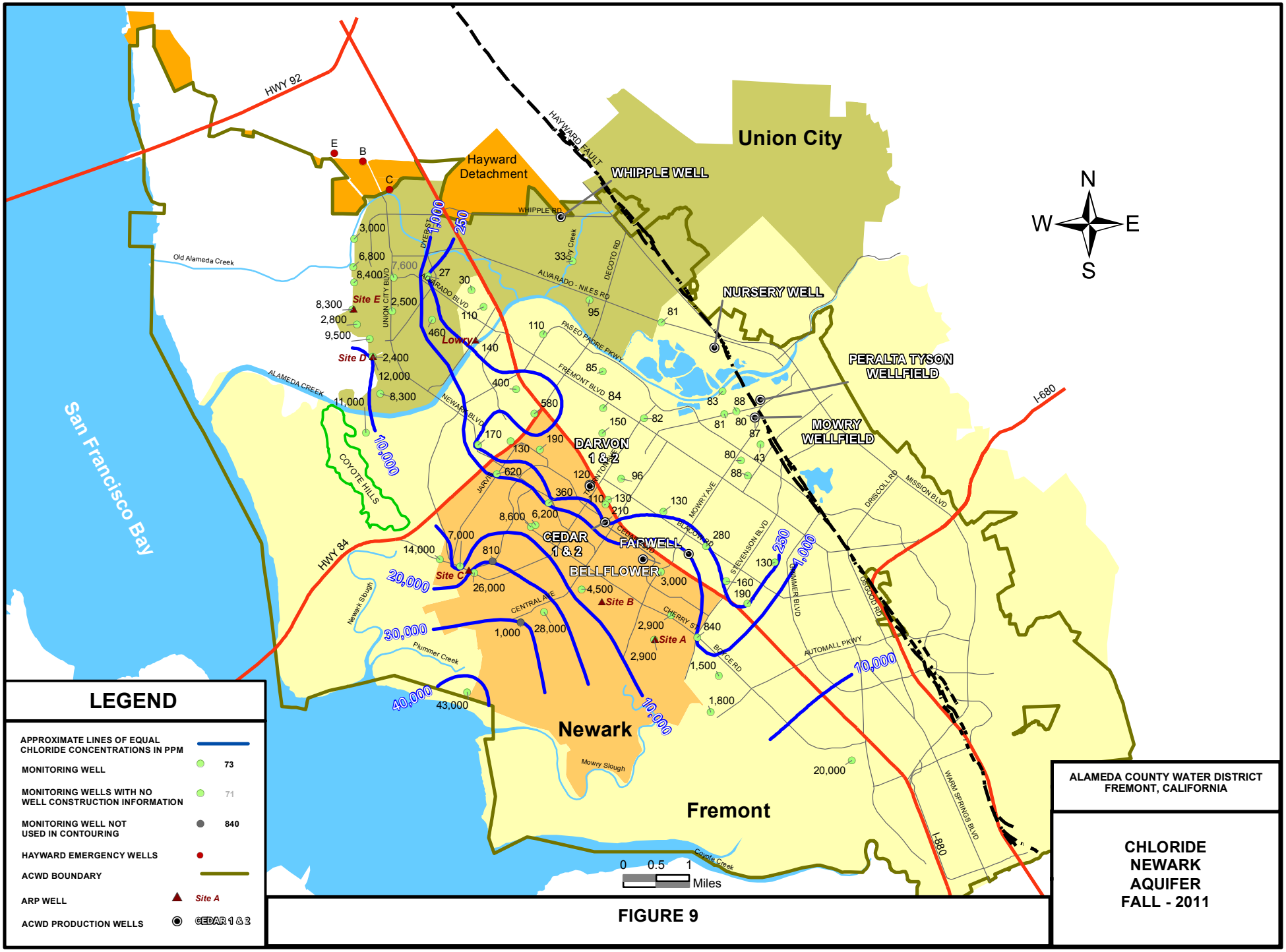

NURSERY WELL
ALVARADO - NILES RD
ROCK POND
HORSESHOE LAKE
RAINBOW LAKE
SNELL POND
GRAU POND
SHINN POND
KAISER POND
BUNTING POND
LAGO LOS OSOS
STEVENSON POND
PIT T-1
PIT T-2
PERALTA TYSON WELLFIELD
MOWRY WELLFIELD
78 472
81 472
87 490
63 428
76 496
74 522
79 523
80 597
74 748
77 826
100 938
96 870
72 618
200 1,074
LAKE ELIZABETH
FREMONT BLVD
PASEO PADRE PKWY
HAYWARD FAULT
MISSION BLVD
MOWRY AVE
STEVENSON BLVD
DRISCOLL RD
ACOW RD
AREA OF DETAIL
San Francisco Bay
N
W
E
S
0
0.5
1
Miles
LEGEND
CHLORIDE 100
TDS 938
ACWD PRODUCTION WELLS
ACWD BOUNDARY
ALAMEDA COUNTY WATER DISTRICT
FREMONT, CALIFORNIA
CHLORIDE AND TDS
ABOVE HAYWARD FAULT
AQUIFER
FALL - 2011

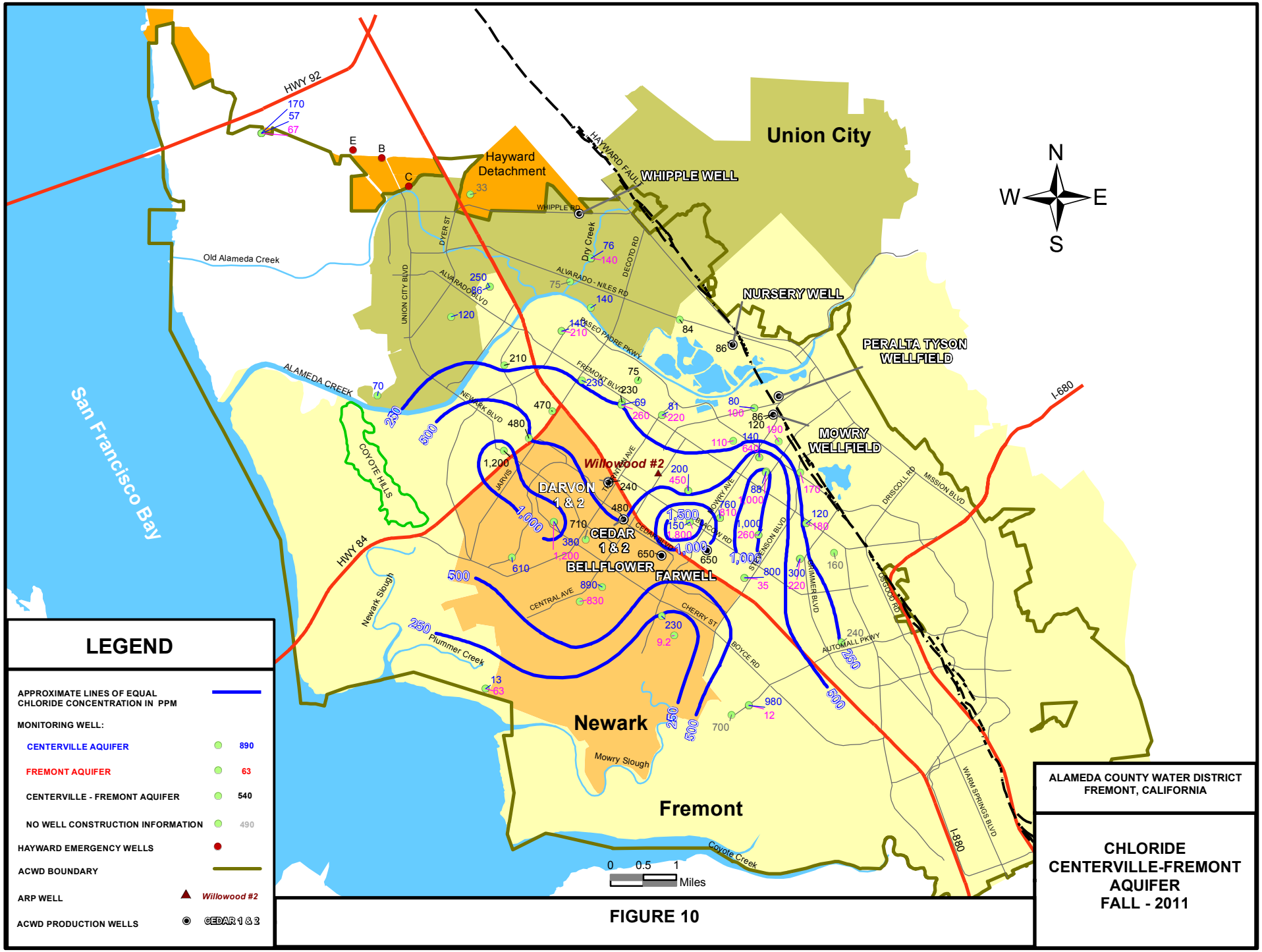
FIGURE 8



ALAMEDA COUNTY WATER DISTRICT
FREMONT, CALIFORNIA

CHLORIDE NEWARK AQUIFER FALL - 2011

FIGURE 9



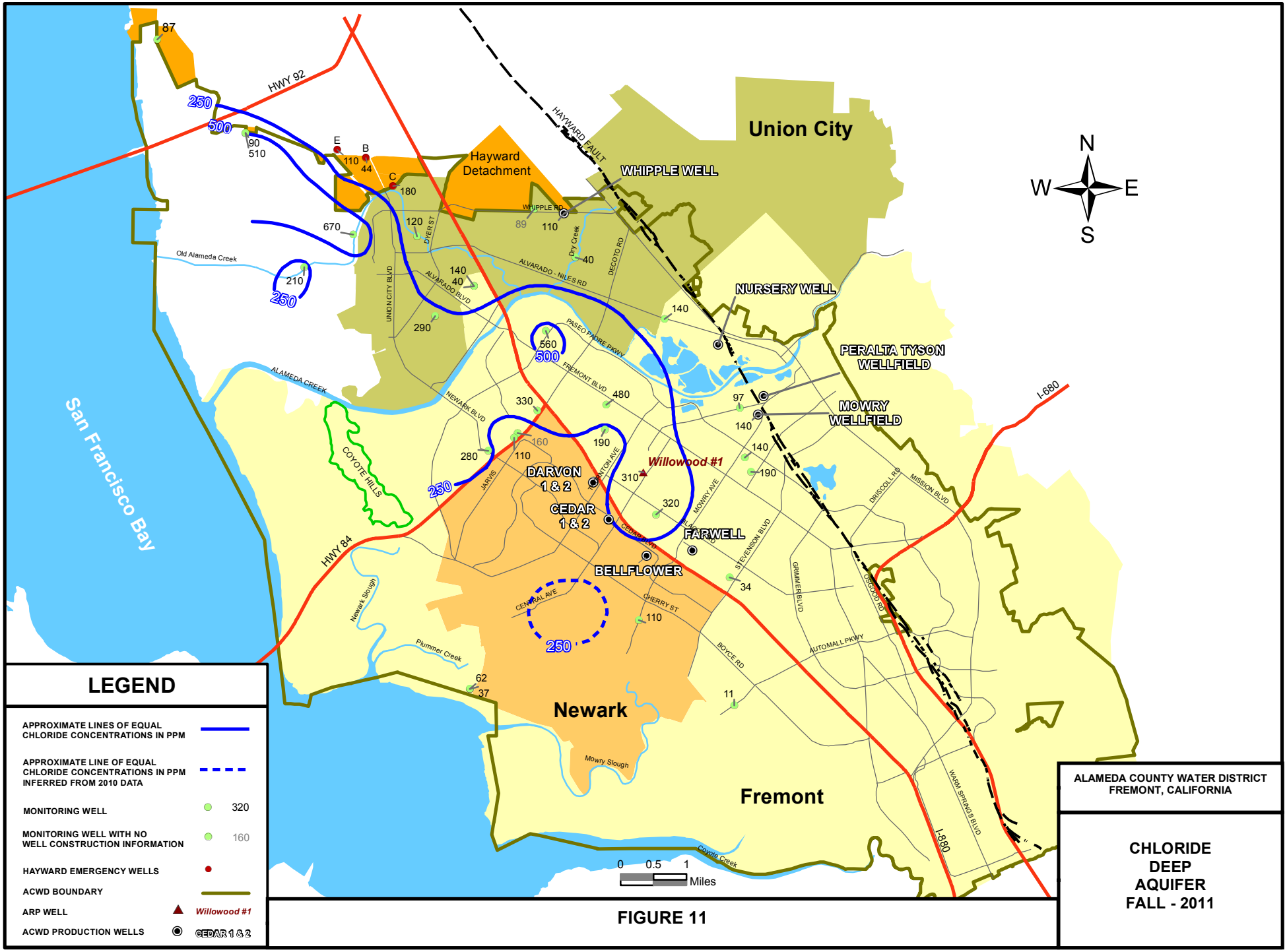
LEGEND

- APPROXIMATE LINES OF EQUAL CHLORIDE CONCENTRATION IN PPM
- MONITORING WELL:
  - CENTERVILLE AQUIFER (890)
  - FREMONT AQUIFER (63)
  - CENTERVILLE - FREMONT AQUIFER (540)
  - NO WELL CONSTRUCTION INFORMATION (490)
- HAYWARD EMERGENCY WELLS
- ACWD BOUNDARY
- ARP WELL (Willowood #2)
- ACWD PRODUCTION WELLS (CEDAR 1 & 2)

ALAMEDA COUNTY WATER DISTRICT
FREMONT, CALIFORNIA

CHLORIDE CENTERVILLE-FREMONT AQUIFER FALL - 2011

FIGURE 10



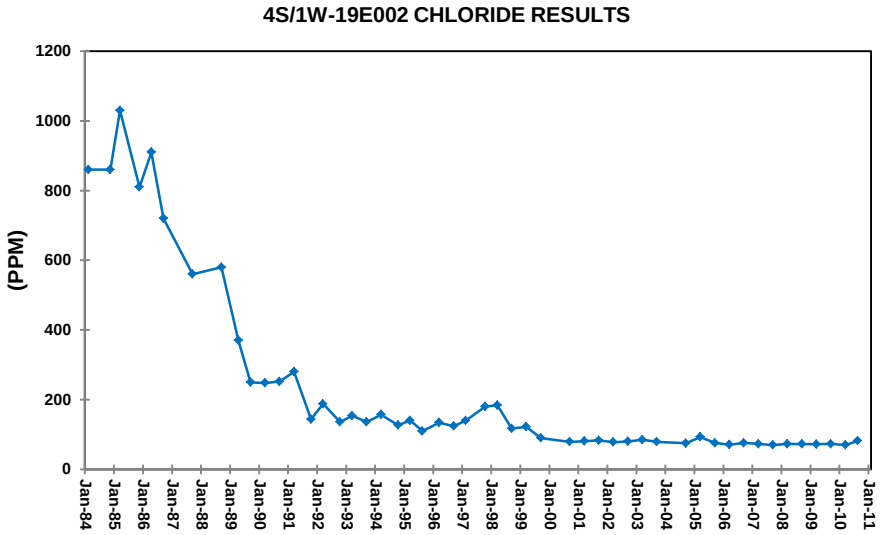
LEGEND

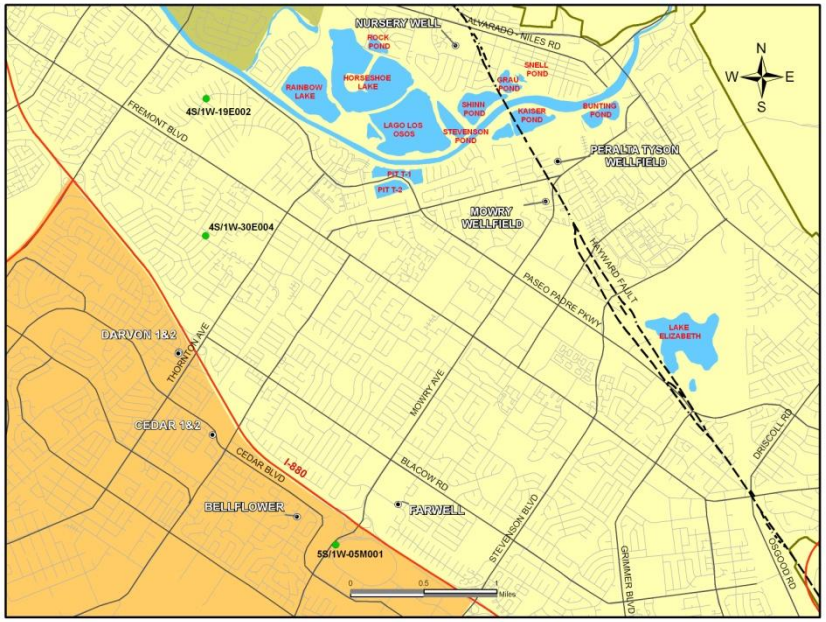
- APPROXIMATE LINES OF EQUAL CHLORIDE CONCENTRATIONS IN PPM
- APPROXIMATE LINE OF EQUAL CHLORIDE CONCENTRATIONS IN PPM INFERRED FROM 2010 DATA
- MONITORING WELL (320)
- MONITORING WELL WITH NO WELL CONSTRUCTION INFORMATION (160)
- HAYWARD EMERGENCY WELLS
- ACWD BOUNDARY
- ARP WELL (Willowood #1)
- ACWD PRODUCTION WELLS (CEDAR 1&2)

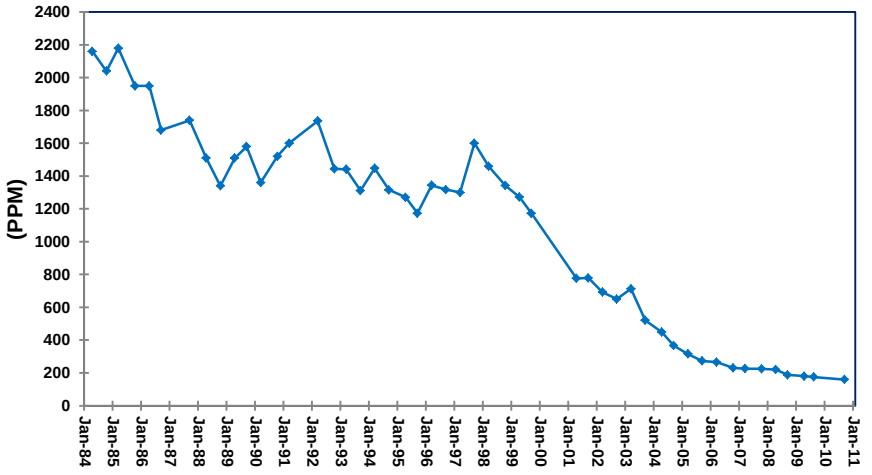
ALAMEDA COUNTY WATER DISTRICT
FREMONT, CALIFORNIA

CHLORIDE DEEP AQUIFER FALL - 2011

FIGURE 11







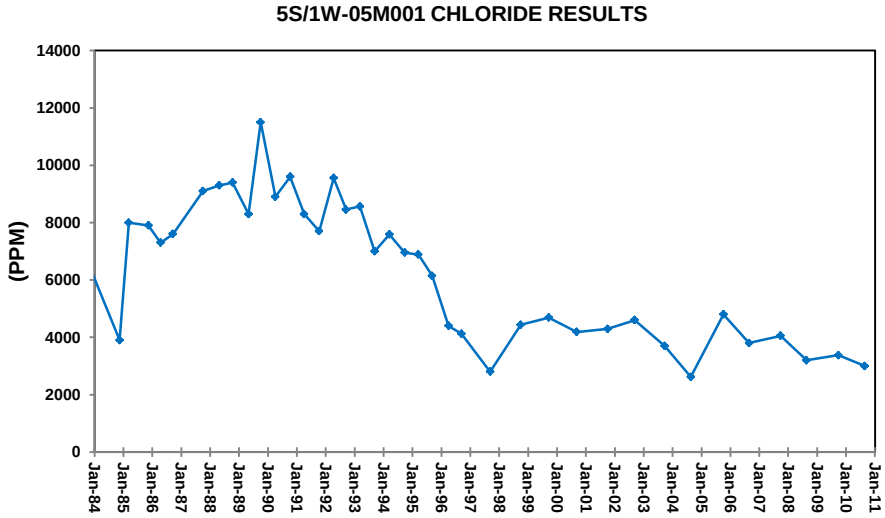
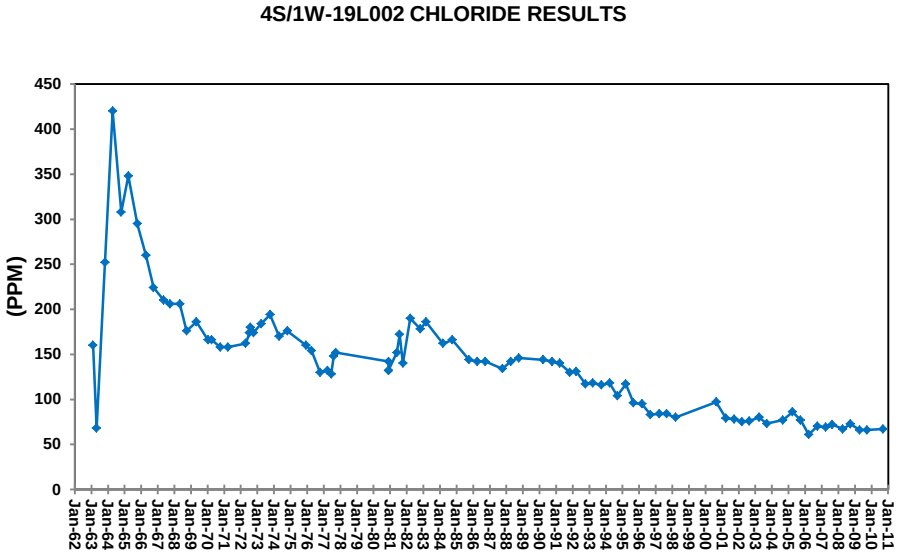
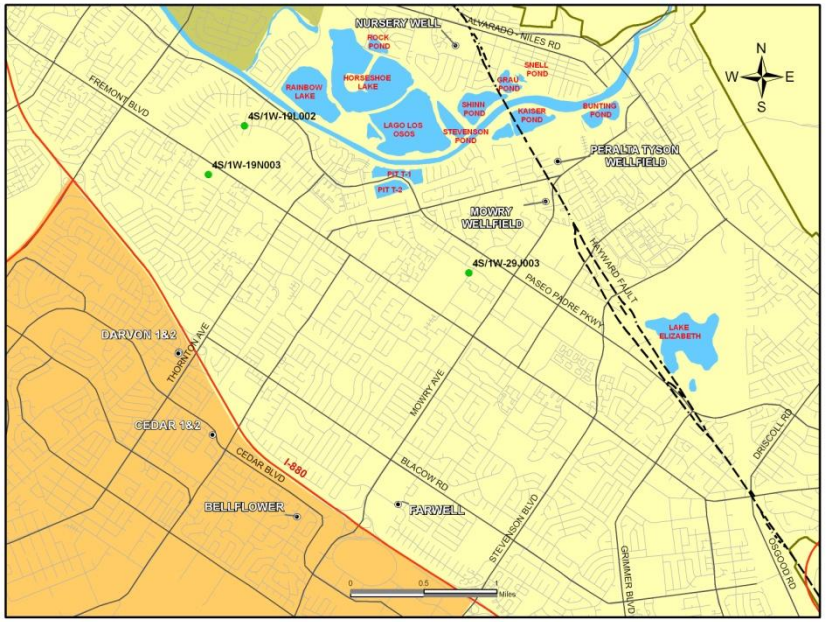
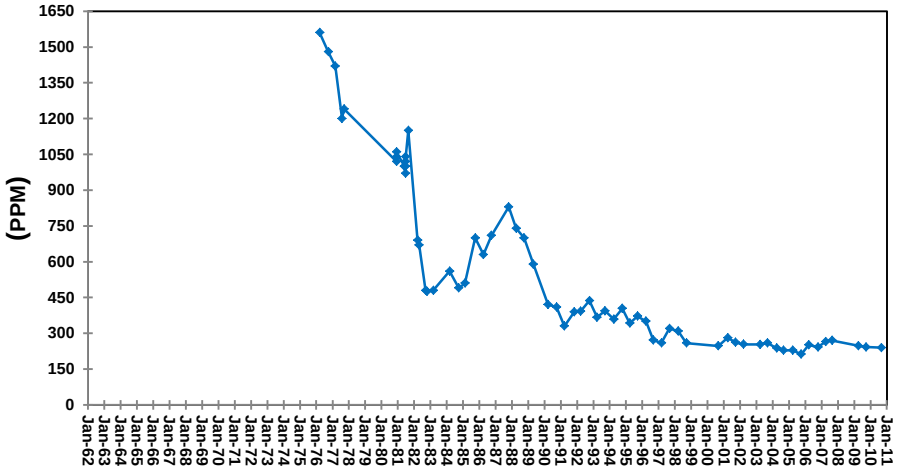


Figure 12
AREA OF IMPROVEMENT NEWARK AQUIFER







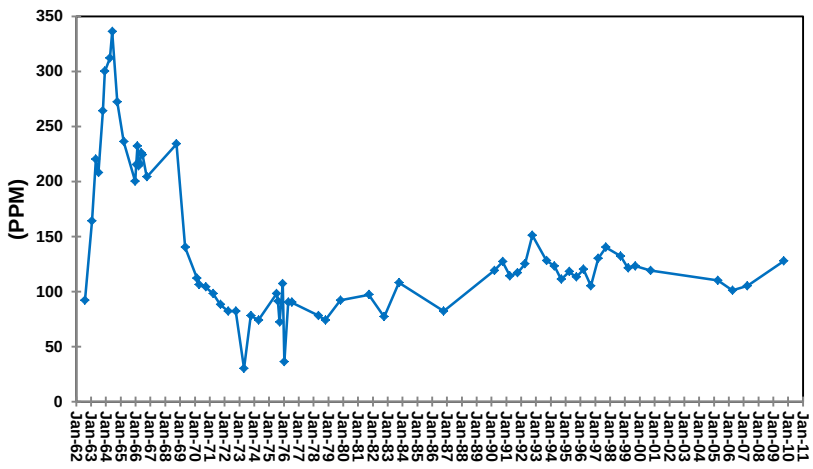
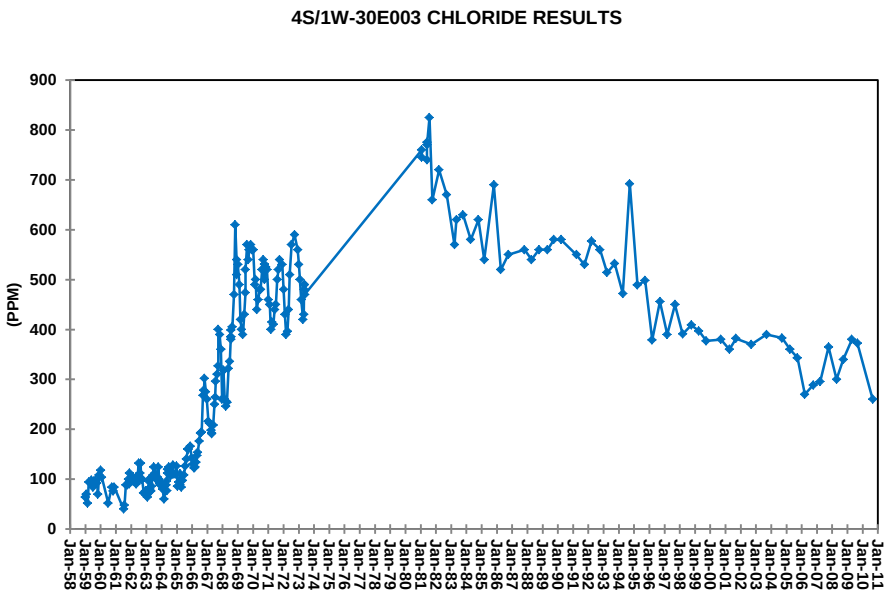
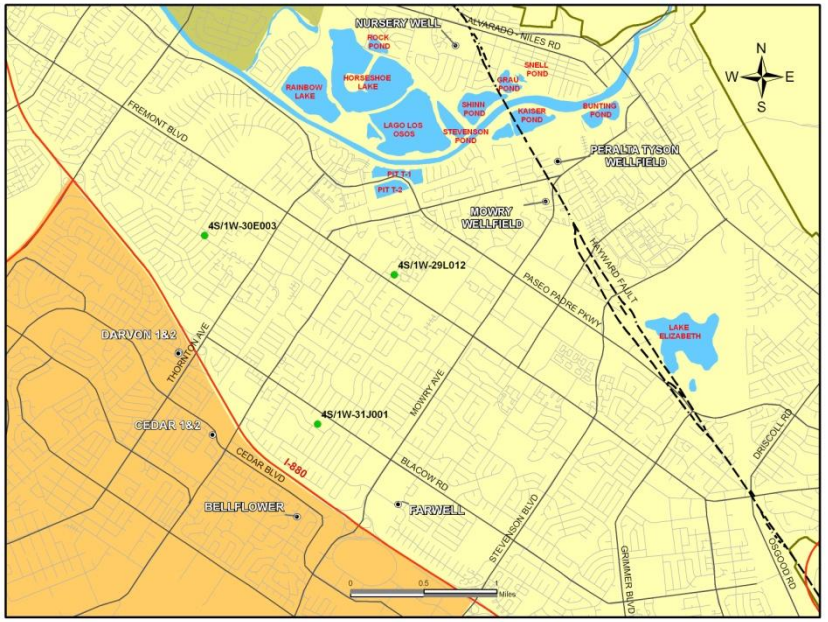
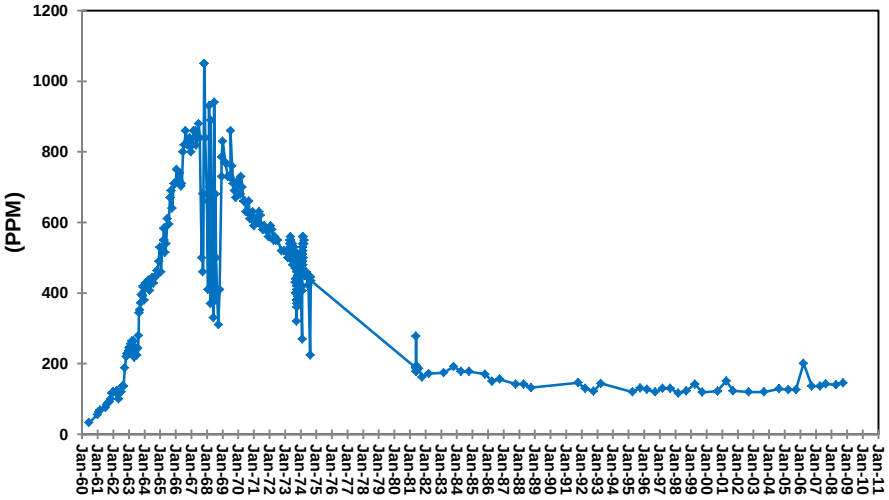


Figure 13
AREA OF IMPROVEMENT CENTERVILLE- FREMONT AQUIFER







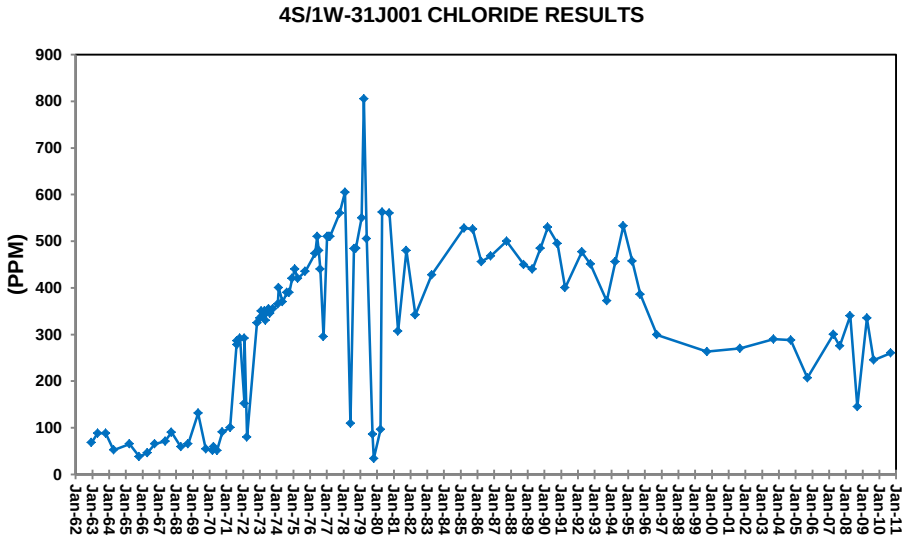
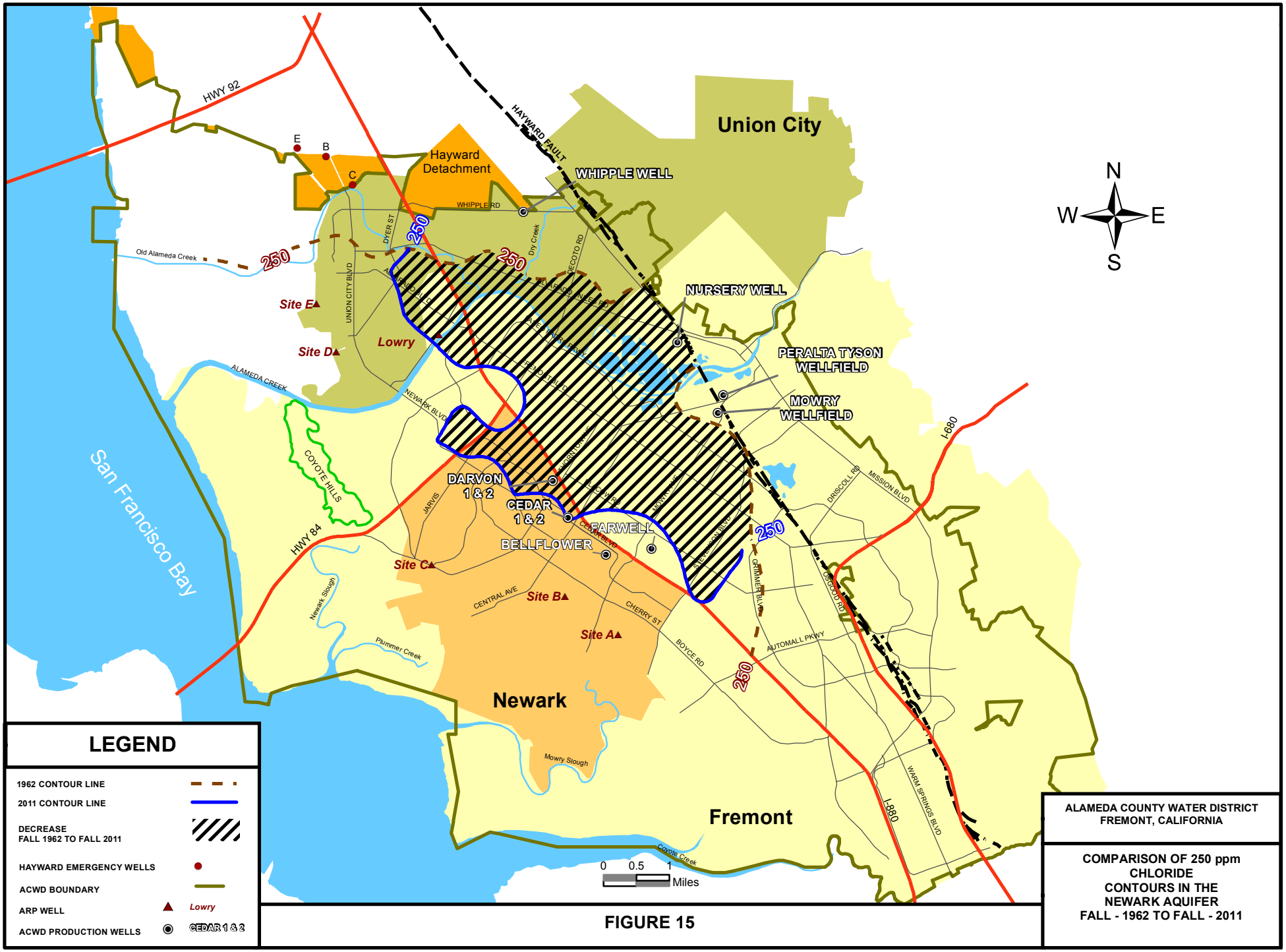


Figure 14
AREA OF IMPROVEMENT DEEP AQUIFER


Union City
Hayward Detachment
HAYWARD FAULT
WHIPPLE WELL
NURSERY WELL
PERALTA TYSON WELLFIELD
MOWRY WELLFIELD
DARVON 1 & 2
CEDAR 1 & 2
FARWELL
BELLFLOWER
Site A
Site B
Site C
Site D
Site E
Lowry
Newark
Fremont
San Francisco Bay
HWY 92
HWY 84
I-680
I-880
ALAMEDA CREEK
Old Alameda Creek
Dry Creek
Newark Slough
Plummer Creek
Mowry Slough
Coyote Creek
COYOTE HILLS
250
N
S
E
W
0 0.5 1 Miles
LEGEND
1962 CONTOUR LINE
2011 CONTOUR LINE
DECREASE FALL 1962 TO FALL 2011
HAYWARD EMERGENCY WELLS
ACWD BOUNDARY
ARP WELL
Lowry
ACWD PRODUCTION WELLS
CEDAR 1 & 2
FIGURE 15
ALAMEDA COUNTY WATER DISTRICT
FREMONT, CALIFORNIA
COMPARISON OF 250 ppm CHLORIDE CONTOURS IN THE NEWARK AQUIFER
FALL - 1962 TO FALL - 2011

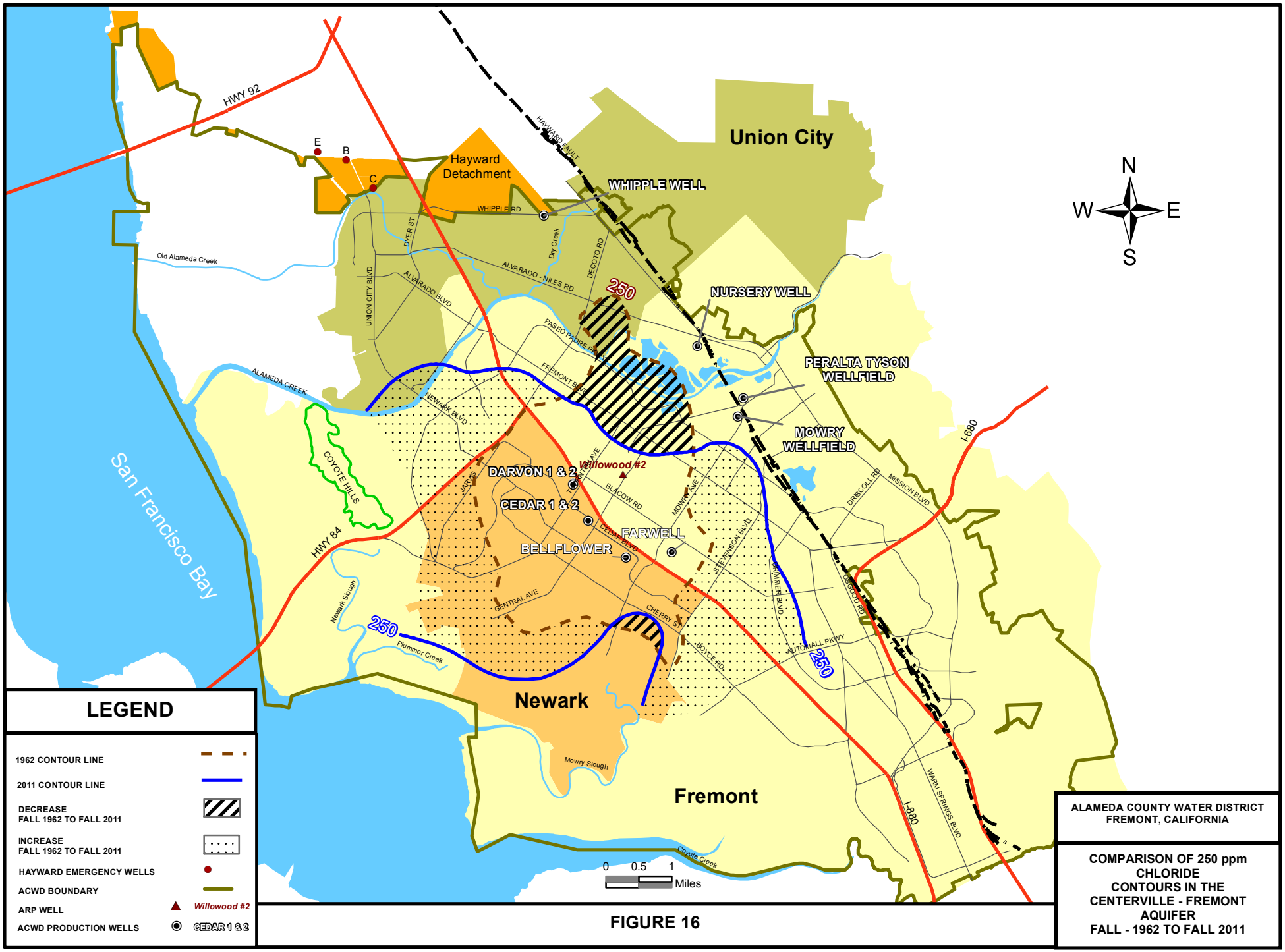
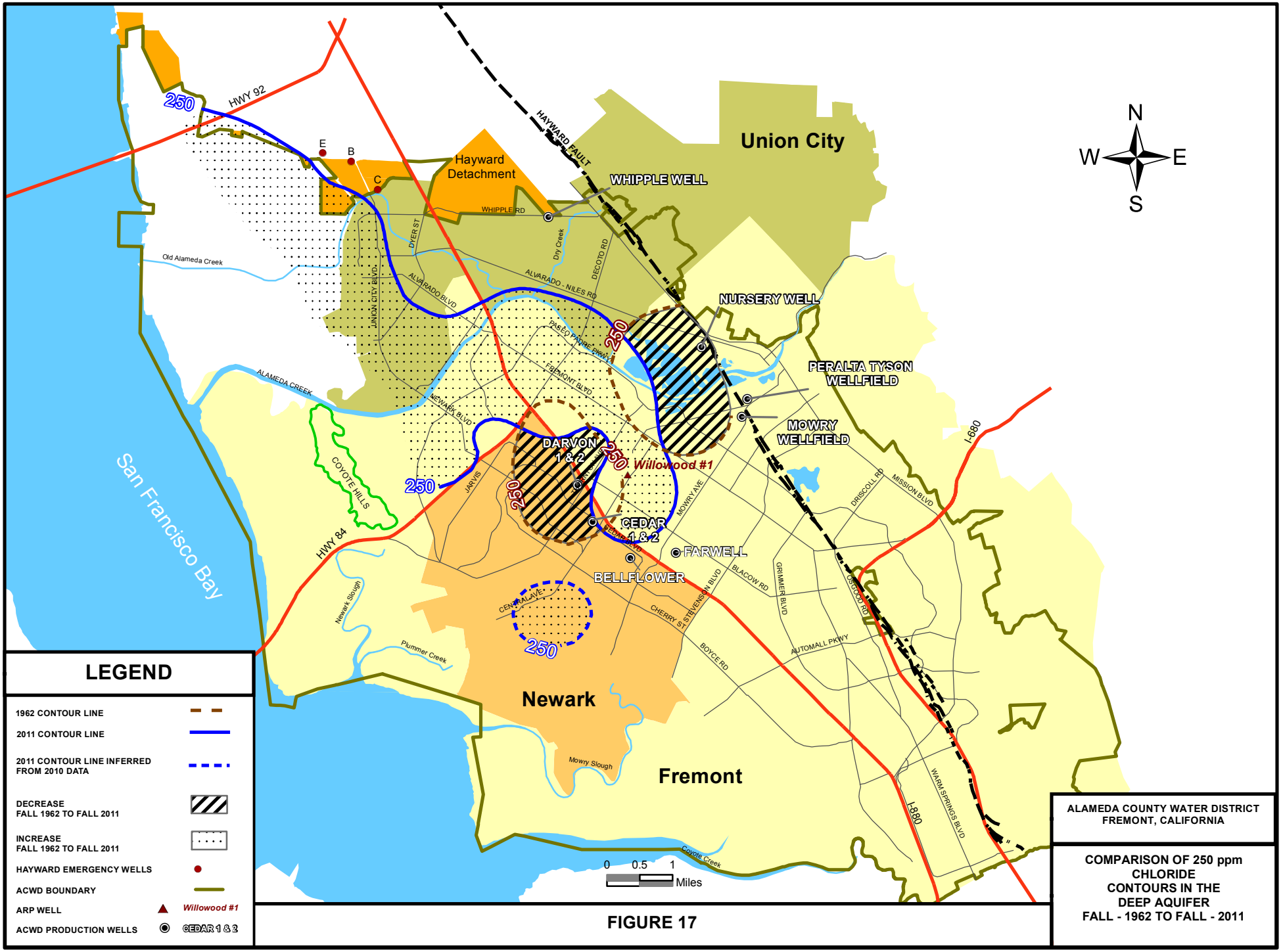

Union City
Hayward Detachment
WHIPPLE WELL
NURSERY WELL
PERALTA TYSON WELLFIELD
MOWRY WELLFIELD
DARVON 1 & 2
Willowood #2
CEDAR 1 & 2
FARWELL
BELLFLOWER
Newark
Fremont
San Francisco Bay
HWY 92
HWY 84
I-880
250
N
W
E
S
0 0.5 1
Miles
LEGEND
1962 CONTOUR LINE
2011 CONTOUR LINE
DECREASE FALL 1962 TO FALL 2011
INCREASE FALL 1962 TO FALL 2011
HAYWARD EMERGENCY WELLS
ACWD BOUNDARY
ARP WELL
ACWD PRODUCTION WELLS
ALAMEDA COUNTY WATER DISTRICT
FREMONT, CALIFORNIA
COMPARISON OF 250 ppm CHLORIDE CONTOURS IN THE CENTERVILLE - FREMONT AQUIFER FALL - 1962 TO FALL 2011

FIGURE 16



ALAMEDA COUNTY WATER DISTRICT
FREMONT, CALIFORNIA

COMPARISON OF 250 ppm CHLORIDE CONTOURS IN THE DEEP AQUIFER
FALL - 1962 TO FALL - 2011

FIGURE 17

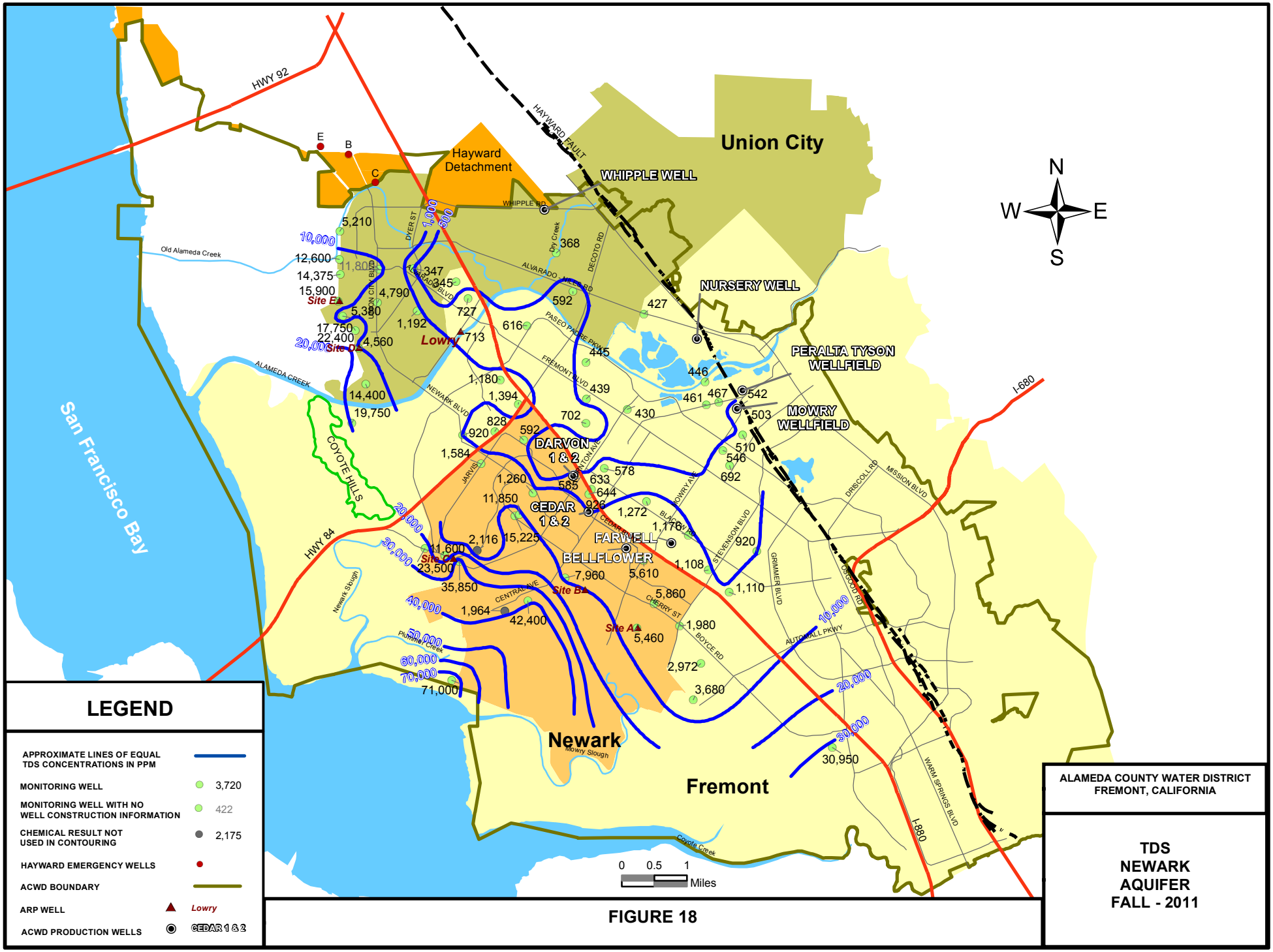
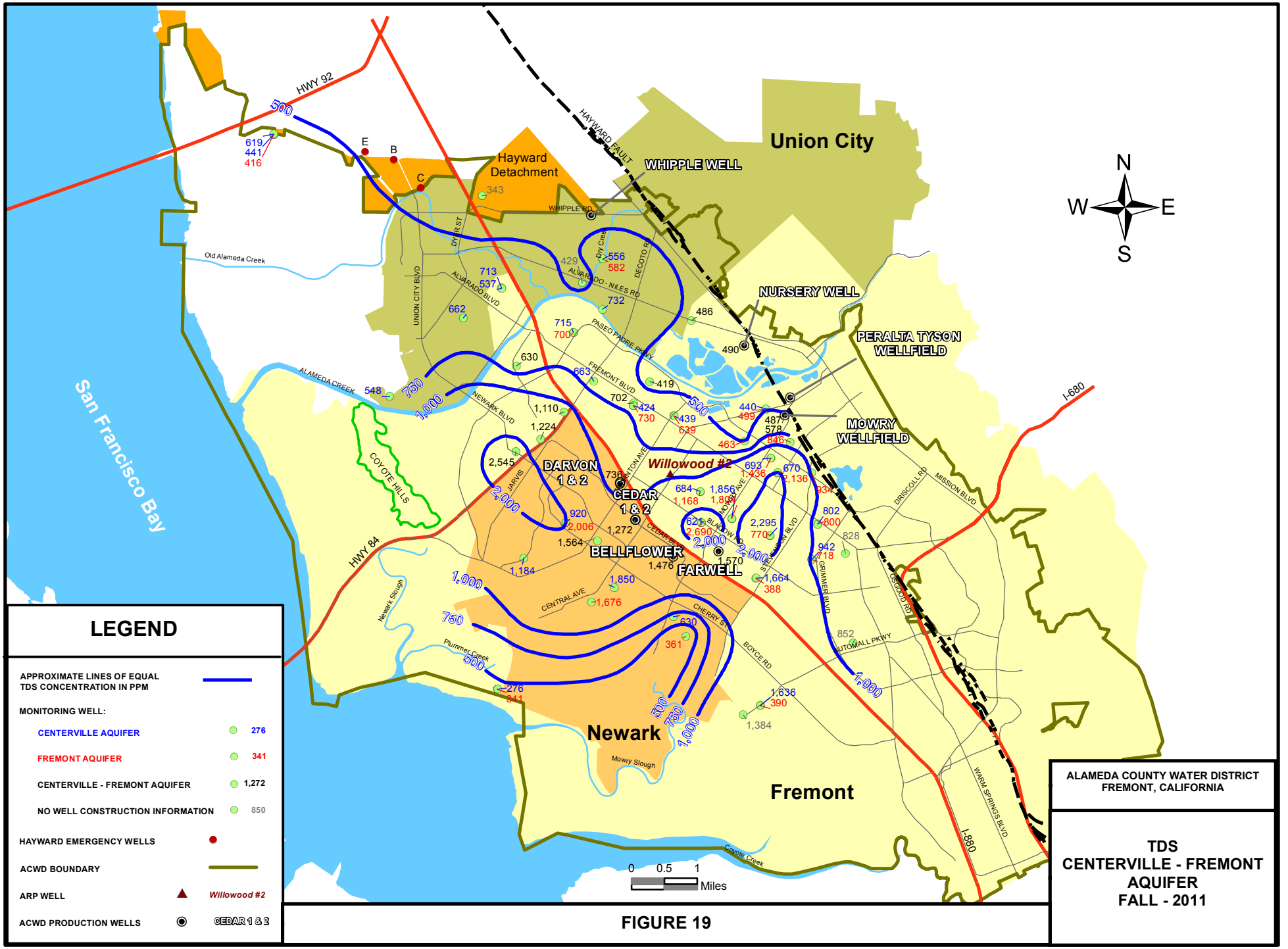

HWY 92
HAYWARD FAULT
Union City
Hayward Detachment
WHIPPLE WELL
NURSERY WELL
PERALTA TYSON WELLFIELD
MOWRY WELLFIELD
DARVON 1 & 2
CEDAR 1 & 2
FARWELL
BELLFLOWER
Site A
Site B
Site D
Lowry
Old Alameda Creek
ALAMEDA CREEK
COYOTE HILLS
San Francisco Bay
HWY 84
Newark Slough
Plummer Creek
Mowry Slough
Coyote Creek
Newark
Fremont
I-680
I-880
N
W
E
S
0 0.5 1
Miles
LEGEND
APPROXIMATE LINES OF EQUAL TDS CONCENTRATIONS IN PPM
MONITORING WELL 3,720
MONITORING WELL WITH NO WELL CONSTRUCTION INFORMATION 422
CHEMICAL RESULT NOT USED IN CONTOURING 2,175
HAYWARD EMERGENCY WELLS
ACWD BOUNDARY
ARP WELL Lowry
ACWD PRODUCTION WELLS CEDAR 1 & 2
ALAMEDA COUNTY WATER DISTRICT
FREMONT, CALIFORNIA
TDS
NEWARK
AQUIFER
FALL - 2011

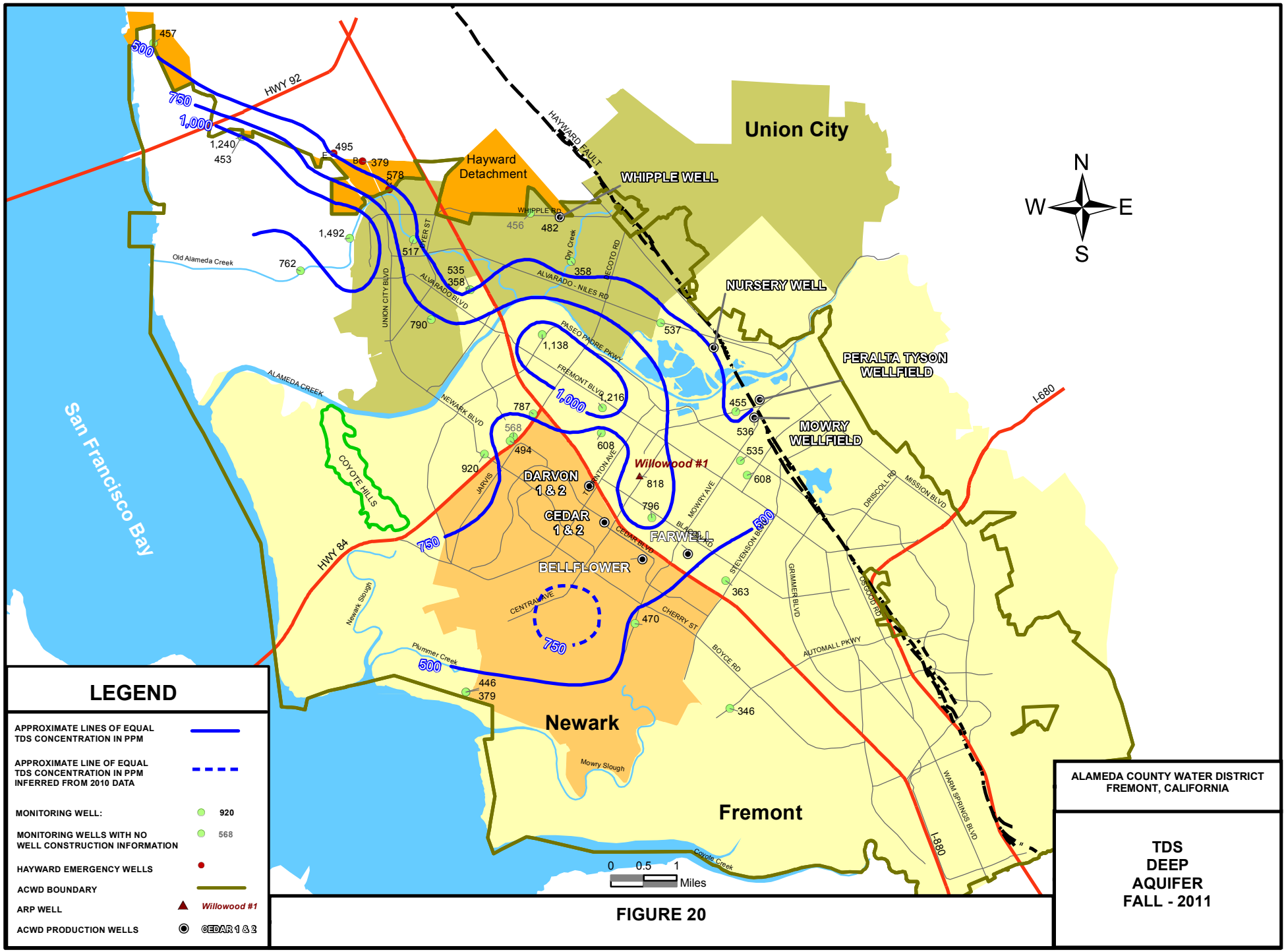
FIGURE 18



ALAMEDA COUNTY WATER DISTRICT
FREMONT, CALIFORNIA

TDS
CENTERVILLE - FREMONT AQUIFER
FALL - 2011

FIGURE 19



ALAMEDA COUNTY WATER DISTRICT
FREMONT, CALIFORNIA

TDS DEEP AQUIFER FALL - 2011

FIGURE 20

APPENDIX C

SPRING 2011 GROUNDWATER MONITORING RECORDS

Alameda County Water District
Groundwater Monitoring Program
Spring 2011

Well Numbers	Alternate Well I.D.	Aquifer	Owner	Date of Water Level	Reference Elevation (feet msl)	Water Elevation (feet msl)	Water Sample Date	Chloride Result (ppm)	TDS (ppm)	Remarks	Well Type
3S/3W-25C020	WD2	D	Alameda County Water District	3/31/2011	8.84	-3.26	3/21/2011	83	442	PWC	O
4S/1W-07K001		D	Masonic Homes of California	3/31/2011	67.4	6	- -			PI	A
4S/1W-07N005		CF	City of Union City	3/22/2011	55.29	5.69	- -			UTS	A
4S/1W-17M006	Well L	D	ALAMEDA COUNTY WATER DISTRICT	- -	49.9		4/5/2011	120	529	PWC	O
4S/1W-17M007	Well M	CF	ALAMEDA COUNTY WATER DISTRICT	- -	50		4/5/2011	77	783	PWC	O
4S/1W-17M008	Well N	N	ALAMEDA COUNTY WATER DISTRICT	- -	49.62		4/5/2011	79	416	PWC	O
4S/1W-18K005		CF	City of Union City	- -	48.6		- -			NMP UTM UTS	A
4S/1W-18M010		CF	Frank J & Catherine M Thrall	3/23/2011	39.92	4.92	- -				D
4S/1W-18N004		CF	Eleanor Kabrich	3/23/2011	41.6	4.3	- -			T	D
4S/1W-19A003		F	Alameda County Flood Control	3/23/2011	54.37	5.27	- -				I
4S/1W-19E002	PIEZ#4	N	ALAMEDA COUNTY WATER DISTRICT	3/23/2011	37.95	17.05	3/23/2011	81	427	PWC	O
4S/1W-19J006		N	Alameda County Flood Control	- -	51.28		- -			PWC	
4S/1W-19L002		CF	ALAMEDA COUNTY WATER DISTRICT	3/23/2011	40.39	3.99	- -			PWC pumped at 160'	O
4S/1W-19N002	Well H	D	ALAMEDA COUNTY WATER DISTRICT	3/30/2011	40.45	3.65	3/30/2011	450	1,174	PWC	O
4S/1W-19N003		CF	CITY OF FREMONT	3/31/2011	39.81	3.61	- -			PWC	O
4S/1W-19N004	Well I	F	ALAMEDA COUNTY WATER DISTRICT	3/30/2011	40.68	3.18	3/30/2011	280	729	PWC	O
4S/1W-19N005	Well J	C	ALAMEDA COUNTY WATER DISTRICT	3/30/2011	40.55	3.85	3/30/2011	72	405	PWC	O
4S/1W-19N014	Well K	N	ALAMEDA COUNTY WATER DISTRICT	3/30/2011	40.5	16.6	3/30/2011	85	423	PWC	O
4S/1W-20A003	Nursery Well	CF	ALAMEDA COUNTY WATER DISTRICT	3/23/2011	63.42	8.42	3/23/2011	88	501		M
4S/1W-20G001		CFD	Alameda County Water District	3/25/2011	60.72	8.72	- -			UTS	AB
4S/1W-20H003		N	ALAMEDA COUNTY WATER DISTRICT	3/24/2011	67.52	29.12	- -			OBS PWC	O
4S/1W-20J004	UP-1A	N	ALAMEDA COUNTY WATER DISTRICT	3/24/2011	58.9	28.3	- -			smaller lid	O
4S/1W-20J005	UP-1C	N	ALAMEDA COUNTY WATER DISTRICT	3/24/2011	59.14	20.44	- -			PWC smaller lid, well-left most facing creek	O
4S/1W-20J006	UP-1B	N	ALAMEDA COUNTY WATER DISTRICT	3/24/2011	59.07	27.57	- -			PWC smaller lid	O
4S/1W-20R003	UP-2A	N	ALAMEDA COUNTY WATER DISTRICT	3/24/2011	59.11	24.91	- -			PWC UTS	O
4S/1W-20R004	UP-2B	N	ALAMEDA COUNTY WATER DISTRICT	3/24/2011	59.2	21.7	- -			PWC	O
4S/1W-20R005	UP-2C	N	ALAMEDA COUNTY WATER DISTRICT	3/24/2011	59.06	19.56	- -			PWC	O
4S/1W-21H002		AHF	Alameda County Water District	3/23/2011	75.08	48.68	- -			PWC	O
4S/1W-21K005		AHF	Alameda County Water District	3/22/2011	69.83	45.13	- -			M	
4S/1W-21L003		AHF	ALAMEDA COUNTY WATER DISTRICT	- -	66.57		- -			NA transducer, flooded	
4S/1W-21L006		AHF	ALAMEDA COUNTY WATER DISTRICT	3/22/2011	67.81	44.61	- -			transducer	O
4S/1W-21L007		AHF	ALAMEDA COUNTY WATER DISTRICT	3/22/2011	70.62	45.02	- -			transducer	
4S/1W-21L008		AHF	ALAMEDA COUNTY WATER DISTRICT	- -	66.94		- -			M NA bushes, brush, gate difficult to open, flooded	
4S/1W-21P004		AHF	CITY OF FREMONT	3/31/2011	65.29	43.79	- -			EPD UTS	AB
4S/1W-21P006	P.T. #1	AHF	ALAMEDA COUNTY WATER DISTRICT	- -	66.37		3/15/2011	85	558	RUN	M
4S/1W-21P007	P.T. #2	AHF	ALAMEDA COUNTY WATER DISTRICT	- -	66.77		- -			UTM Rehab	M
4S/1W-21P008	P.T. #3	AHF	ALAMEDA COUNTY WATER DISTRICT	- -	66.54		- -			RUN	M
4S/1W-21P009	P.T. #4	AHF	ALAMEDA COUNTY WATER DISTRICT	3/31/2011	66.44	39.24	3/14/2011	84	531	OFF	M
4S/1W-21P010	P.T. #5	AHF	ALAMEDA COUNTY WATER DISTRICT	3/31/2011	67.28	40.48	4/4/2011	87	87	OFF	M
4S/1W-21P011	P.T. #6	AHF	ALAMEDA COUNTY WATER DISTRICT	3/31/2011	67.69	40.79	3/14/2011	87	472	RUN	M
4S/1W-21P012	P.T. #7	AHF	ALAMEDA COUNTY WATER DISTRICT	- -	68.36		- -			NMP Rehab	M
4S/1W-21P013	P. T. #8	AHF	ALAMEDA COUNTY WATER DISTRICT	3/31/2011	68.86	41.36	3/15/2011	86	485	OFF	M
4S/1W-21R007		AHF	Alameda County Water District	3/23/2011	72.21	44.51	- -			PWC	
4S/1W-22P006		AHF	ALVIN MARTIN	3/31/2011	80.61	45.81	- -			RUN T CUST REQ. RESULTS WHEN SAMPLED, IF POSS	A, D
4S/1W-26Q011		AHF	ERNIE SILVA	3/31/2011	96.44	79.34	- -			T	D
4S/1W-27A002		AHF	Fremont Community Church	3/31/2011	71.09	46.49	- -				
4S/1W-27D008	AHF Indicator	AHF	ALAMEDA COUNTY WATER DISTRICT	3/31/2011	66.59	45.39	- -			PWC	O
4S/1W-27E001		AHF	CHURCH OF JESUS CHRIST	3/25/2011	62.86	45.46	- -			PI T UTS	D
4S/1W-27P001		AHF	CITY OF FREMONT	- -	54.04		- -			NA UTS flooded	M
4S/1W-27P002		AHF	CITY OF FREMONT	- -	52.65		- -			NA UTS flooded	A
4S/1W-28C001	Mowry #1	N	ALAMEDA COUNTY WATER DISTRICT	3/24/2011	64.81	14.61	- -			OFF	M
4S/1W-28C014	Mowry #2	D	ALAMEDA COUNTY WATER DISTRICT	3/24/2011	63.64	0.84	- -			OFF transducer	M
4S/1W-28C015	Mowry #3	CF	ALAMEDA COUNTY WATER DISTRICT	3/24/2011	63.87	2.77	- -			Rehab	M
4S/1W-28C016	Mowry #4	N	ALAMEDA COUNTY WATER DISTRICT	3/24/2011	66.08	15.78	- -			OFF	M

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Well Numbers	Alternate Well I.D.	Aquifer	Owner	Date of Water Level	Reference Elevation (feet msl)	Water Elevation (feet msl)	Water Sample Date	Chloride Result (ppm)	TDS (ppm)	Remarks	Well Type
4S/1W-28C018	Mowry #6	CF	ALAMEDA COUNTY WATER DISTRICT	3/24/2011	64.8	1.7	- -			OFF	M
4S/1W-28C019	Mowry #7	N	ALAMEDA COUNTY WATER DISTRICT	3/24/2011	63.82	15.02	- -			OFF	M
4S/1W-28C020	Mowry #8	N	ALAMEDA COUNTY WATER DISTRICT	3/24/2011	64.13	14.13	- -			OFF transducer	M
4S/1W-28C021	Mowry #9	CF	ALAMEDA COUNTY WATER DISTRICT	3/24/2011	65.02	1.42	- -			OFF transducer	M
4S/1W-28D001	Well A	D	ALAMEDA COUNTY WATER DISTRICT	3/31/2011	63.03	3.03	- -			PWC	O
4S/1W-28D008	Well B	F	ALAMEDA COUNTY WATER DISTRICT	3/31/2011	62.77	2.77	- -			PWC	O
4S/1W-28D011	Well C	C	ALAMEDA COUNTY WATER DISTRICT	3/31/2011	62.9	3.7	- -			PWC	O
4S/1W-28D012	Well D	N	ALAMEDA COUNTY WATER DISTRICT	3/31/2011	62.86	17.06	- -			PWC	O
4S/1W-28F005		D	WASHINGTON TOWNSHIP HOSPITAL DIST	3/31/2011	61.6	-0.7	- -			T	I
4S/1W-28F018		N	Alameda County Water District	4/1/2011	58.71	15.31	4/1/2011	61	649	PWC	
4S/1W-28F024	BART WAY-F	F	ALAMEDA COUNTY WATER DISTRICT	4/1/2011	59.15	3.05	4/1/2011	210	821	PWC	O
4S/1W-28H007		AHF	SAL R. GUARDINO	- -	63.04		- -			RUN T	A
4S/1W-28M002		N	Alameda County Water District	3/25/2011	53.81	14.51	3/25/2011	86	555	PWC	
4S/1W-28M005		D	Alameda County Water District	3/25/2011	54.12	2.52	3/25/2011	160	550	PWC	
4S/1W-28M006		CF	Mercedes Williams	3/24/2011	57.09	4.69	- -			PI UTS	D
4S/1W-28M009		F	Alameda County Water District	3/25/2011	54.21	2.41	3/25/2011	680	1,344	PWC	
4S/1W-28M010		C	Alameda County Water District	3/25/2011	54.2	2.7	3/25/2011	150	709	PWC Barologger	
4S/1W-28P001		CF	Central Realty Company	- -	55.62		- -			OBS@60' PWC UTL UTS	AB
4S/1W-28P004	BEACON	C	ALAMEDA COUNTY WATER DISTRICT	- -	53.56		4/6/2011	86	570	PWC	O
4S/1W-28P006	Well E	D	ALAMEDA COUNTY WATER DISTRICT	- -	53.66		4/6/2011	190	568	PWC	O
4S/1W-28P007	Well F	F	ALAMEDA COUNTY WATER DISTRICT	- -	53.5		4/6/2011	1,000	1,944	PWC	O
4S/1W-28P008	Well G	N	ALAMEDA COUNTY WATER DISTRICT	- -	53.53		4/6/2011	85	661	PWC	O
4S/1W-28R003	Fmt. Library F	F	Alameda County Water District	3/24/2011	59.7	2.2	3/24/2011	150	912	M PWC Well box flooded	
4S/1W-29A006	BHF Indicator	N	ALAMEDA COUNTY WATER DISTRICT	3/31/2011	61.23	18.83	- -			PWC	O
4S/1W-29C007		N	ALAMEDA COUNTY WATER DISTRICT	- -	55.25		- -			M NA needs a post & slipcap, OBS	O
4S/1W-29C008		N	ALAMEDA COUNTY WATER DISTRICT	- -	57.41		- -			M NA	O
4S/1W-29F002		N	Robert D & Virginia W. Grate	3/25/2011	51.93	16.33	- -			PWC	AB
4S/1W-29H002	Centerville Par	F	ALAMEDA COUNTY WATER DISTRICT	3/22/2011	52.44	2.24	3/22/2011	110	468	M PWC needs new cap	O
4S/1W-29J003		CF	CITY OF FREMONT	- -	55.28		- -			NMP UTM UTS	A, M
4S/1W-29J008		N	CALDEIRA, ELAINE T. & ROBERT A.	3/24/2011	58.48	13.68	- -			PI T UTS	D
4S/1W-29L012	Fremont Mattos	D	ALAMEDA COUNTY WATER DISTRICT	3/31/2011	50.62	1.72	- -			PWC	O
4S/1W-30A002	Well O	FD	ALAMEDA COUNTY WATER DISTRICT	3/24/2011	51.81	2.21	3/24/2011	220	626	PWC transducer	O
4S/1W-30A004	Well Q	C	ALAMEDA COUNTY WATER DISTRICT	3/24/2011	52.01	3.51	3/24/2011	78	423	PWC	O
4S/1W-30A005	Well R	N	ALAMEDA COUNTY WATER DISTRICT	3/24/2011	52.2	16.1	3/24/2011	87	430	PWC	O
4S/1W-30E003	CORONADO 2	D	ALAMEDA COUNTY WATER DISTRICT	3/25/2011	42.12	1.92	- -			PWC transducer(Minitroll)	O
4S/1W-30E004	CORONADO 1	N	ALAMEDA COUNTY WATER DISTRICT	3/25/2011	42.17	15.17	- -			PWC	O
4S/1W-30J002		N	Jeffery H. Lee	3/31/2011	46.74	15.64	- -			PWC	O
4S/1W-30L006		D	Joseph G. Dutra	3/25/2011	42.23	2.73	- -			UTS , call first for permission	A
4S/1W-30L008		N	Joseph G. Dutra	3/25/2011	41.9	14.6	- -			UTS , call first for permission	AB
4S/1W-30R002		CF	Frank G. & Alice C. Garcia	3/31/2011	46.14	1.14	- -			PI T	O
4S/1W-30R004		N	Frank G. & Alice C. Garcia	3/31/2011	45.19	14.89	- -			PWC	AB
4S/1W-31B003	Willowood #1	D	ALAMEDA COUNTY WATER DISTRICT	- -	43.54		4/6/2011	290	648	PWC	ARP
4S/1W-31B011	Willowood # 2	CF	ALAMEDA COUNTY WATER DISTRICT	3/31/2011	44.47	-0.83	- -			UTS	ARP, O
4S/1W-31C003		N	ALAMEDA COUNTY WATER DISTRICT	3/24/2011	36.56	13.66	3/24/2011	100	574	M PWC	O
4S/1W-31J001		D	GLENMOOR GARDENS HOMEOWNERS ASSOCIA	3/24/2011	38.94	1.14	- -			T	D
4S/1W-31L008		N	Alameda County Water District	3/22/2011	36.76	12.66	- -			PWC	
4S/1W-31L009		N	Alameda County Water District	3/22/2011	33.94	12.44	- -			PWC	
4S/1W-31N001	Cedar #1	CF	ALAMEDA COUNTY WATER DISTRICT	- -	35.37		3/9/2011	550	1,194	RUN UTM	M, ARP
4S/1W-31N003	Cedar #2	N	ALAMEDA COUNTY WATER DISTRICT	- -	35.2		3/9/2011	200	862	RUN UTM	M, ARP
4S/1W-32E011	Meyer Park - C	C	Alameda County Water District	4/5/2011	43.68	-0.02	4/5/2011	270	743	PWC	
4S/1W-32E012	Meyer Park - F	F	Alameda County Water District	4/5/2011	43.89	2.39	4/5/2011	360	954	PWC	
4S/1W-32K011	Serra Place-F	F	Alameda County Water District	3/22/2011	43.39	1.59	3/22/2011	790	1,606	PWC	O
4S/1W-32K014	Serra-C	C	Alameda County Water District	3/22/2011	43.28	-1.02	3/22/2011	750	1,558	PWC	O
4S/1W-32M010		N	ALAMEDA COUNTY WATER DISTRICT	3/24/2011	38.67	13.47	- -			PWC	O

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Well Numbers	Alternate Well I.D.	Aquifer	Owner	Date of Water Level	Reference Elevation (feet msl)	Water Elevation (feet msl)	Water Sample Date	Chloride Result (ppm)	TDS (ppm)	Remarks	Well Type
4S/1W-32N001	Blacow - C	C	Alameda County Water District	3/29/2011	37.65	-1.75	3/29/2011	170	651	PWC	
4S/1W-32N002	Blacow - F	F	Alameda County Water District	3/29/2011	37.59	1.69	3/29/2011	1,700	2,452	PWC	
4S/1W-33N002	Knoll Park	C	ALAMEDA COUNTY WATER DISTRICT	3/29/2011	43.75	1.15	3/29/2011	1,100	2,284	NA PWC SFPUC Construction	O
4S/1W-33N003	Knoll Park - F	F	Alameda County Water District	3/29/2011	43.64	2.34	3/29/2011	290	756	NA PWC SFPUC Construction	
4S/1W-33R007	Margery/Bl - C	C	Alameda County Water District	3/23/2011	53.25	1.45	3/23/2011	130	796	PWC	
4S/1W-33R008	Margery/Bl - F	F	Alameda County Water District	3/23/2011	53.18	1.68	3/23/2011	190	790	PWC	
4S/1W-34A002		AHF	Elsie Nines	3/31/2011	60	54.5	- -			T	D
4S/1W-34C001		AHF	CITY OF FREMONT	- -	61.3		- -			NMP OFF UTM	MR
4S/1W-35R003		AHF	Mary A Souza	3/22/2011	190.16	176.96	- -			T UTS no sample point	D
4S/2W-02H001		D	Bay Area Rapid Transit District	3/28/2011	36.21	2.11	- -			T UTS	I
4S/2W-03R003		CF	F E DUBOIS	3/28/2011	12	4.6	- -			T tape	D, I
4S/2W-04E002	E-3	N	ALAMEDA COUNTY WATER DISTRICT	3/21/2011	4.72	-2.48	- -			PWC	O
4S/2W-05G001	Eden Landing F1	F	Alameda County Water District	3/31/2011	6.75	-1.45	3/31/2011	62	421	PWC	O
4S/2W-05G002	Eden Landing D1	D	Alameda County Water District	3/31/2011	6.35	-2.35	3/31/2011	82	441	PWC	O
4S/2W-05G003	Eden Landing D2	D	Alameda County Water District	3/31/2011	5.82	-9.98	3/31/2011	500	1,242	PWC	O
4S/2W-05G004	Eden Landing C2	C	Alameda County Water District	3/31/2011	6.73	3.23	3/31/2011	56	441	PWC	O
4S/2W-05G005	Eden Landing	C	Alameda County Water District	3/31/2011	6.93		3/31/2011	170	627	PWC	O
4S/2W-08Q001	2D2	D	Alameda County Water District	3/31/2011	9.25	0.85	3/31/2011	220	743	PWC Minitroll transducer	O
4S/2W-09F014	Veasy Bridgegat	D	Alameda County Water District	3/31/2011	8.25	0.85	3/31/2011	720	1,366	PWC solinst transducer	O
4S/2W-09L002	E-12	N	ALAMEDA COUNTY WATER DISTRICT	3/31/2011	9.11	4.71	3/31/2011	1,400	4,930	PWC	O
4S/2W-09P010	E-17	N	ALAMEDA COUNTY WATER DISTRICT	3/24/2011	11.31	6.41	- -			PWC	O
4S/2W-10E004	Tidewater	D	Alameda County Water District	3/24/2011	14.54	0.94	- -			M PWC Grafitti, Solinst transducer	O
4S/2W-11A003		D	U.S. PIPE HOLDINGS CORPORATION	3/30/2011	40.58	2.18	3/21/2011	94	462	NMP RUN	I
4S/2W-12C001	Whipple Well	D	ALAMEDA COUNTY WATER DISTRICT	3/21/2011	68.61	1.31	3/23/2011	120	476	transducer	M
4S/2W-12K008		D	Alameda County Water District	3/24/2011	53.11	1.51	- -			PWC Transducer(minitroll)	
4S/2W-12K009		F	Alameda County Water District	3/24/2011	53.41	3.41	- -			PWC	
4S/2W-12K010		C	Alameda County Water District	3/24/2011	53.39	4.59	- -			PWC	
4S/2W-12K011		N	Alameda County Water District	3/24/2011	53.67	17.77	- -			PWC	
4S/2W-13C004		CF	MANUEL SOARES	3/29/2011	33.56	4.36	- -			OBS@38' T	A, D
4S/2W-13E003		N	ALAMEDA COUNTY FLOOD CONTROL	3/29/2011	27.93	16.73	- -			PWC	O
4S/2W-13H004		N	CITY OF UNION CITY	- -	37.55		3/31/2011	94	600	NMP OFF UTM	M
4S/2W-13K004		C	RAYMOND N. NELSEN	3/29/2011	35.04	3.74	- -			T	D
4S/2W-13K005		CF	JUANA & CATALINA ALVARDO	3/29/2011	36.32	4.62	- -			T	D
4S/2W-13M005		CF	ROSIE & JOEY OROCCHI	3/21/2011	26.46	3.46	- -				D
4S/2W-13M006		CF	ROSEMARY & ROBERT MAZZA	3/30/2011	27.42	4.42	- -				A, D
4S/2W-13P004	PIEZ#3	N	ALAMEDA COUNTY WATER DISTRICT	3/31/2011	25.9	16.7	- -			PWC Transducer	O
4S/2W-13P005	WELL G-1	D	Alameda County Water District	3/31/2011	25.98	2.88	- -			PWC	
4S/2W-13P006	WELL H-1	F	Alameda County Water District	3/31/2011	26.15	3.65	- -			PWC	
4S/2W-13P007	WELL I-1	C	Alameda County Water District	3/31/2011	26	4	- -			PWC	
4S/2W-14C001		CF	HARVEY, T.	3/29/2011	23.27	3.77	- -			RUN T	A
4S/2W-14D003	Lake Chad	D	Alameda County Water District	3/22/2011	13.95	1.35	3/22/2011	41	359	PWC Transducer(Solinst)	O
4S/2W-14D004		D	Alameda County Water District	3/22/2011	13.9	1.1	3/22/2011	150	531	PWC Transducer(Solinst)	
4S/2W-14D005		C	Alameda County Water District	3/22/2011	14.1	3.1	3/22/2011	250	705	PWC	
4S/2W-14D006		C	Alameda County Water District	3/22/2011	14.18	2.98	3/22/2011	86	536	PWC	
4S/2W-14D007		N	Alameda County Water District	3/22/2011	14.07	11.57	3/22/2011	37	374	PWC	
4S/2W-14H003		N	ACFC & WCD	- -	25.22		- -			NMP UTM newly reconstructed well	A
4S/2W-14L006	PIEZ#2	N	ALAMEDA COUNTY WATER DISTRICT	3/21/2011	14.97	12.67	- -			M PWC coupling	O
4S/2W-14N001	Lowry	N	ALAMEDA COUNTY WATER DISTRICT	3/29/2011	22.64	17.84	3/29/2011	140	715		ARP
4S/2W-14R003		N	MELLO, MELVIN	3/29/2011	26.94	15.34	- -			PWC UTS	AB
4S/2W-15C007	PIEZ#1	N	ALAMEDA COUNTY WATER DISTRICT	3/29/2011	9.31	8.31	- -			PWC	O
4S/2W-15L005	Contempo Pk	D	Alameda County Water District	3/29/2011	7.63	1.93	3/29/2011	330	791	PWC Transducer(Solinst)	O
4S/2W-15L006		C	Alameda County Water District	3/29/2011	7.59	3.59	3/29/2011	120	665	PWC	
4S/2W-15L007		N	Alameda County Water District	3/29/2011	7.66		3/29/2011	530	1,270	PWC	
4S/2W-15M003		CF	CITY OF UNION CITY	- -	7.77		- -			UTM UTS Need 2010 Key, newly reconstructed well	A

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4S/2W-15M004		CF	CITY OF UNION CITY	3/21/2011	7.73	2.83	- -			M UTS	AB
4S/2W-15P001	PIEZ#10	N	ALAMEDA COUNTY WATER DISTRICT	3/30/2011	6.1		- -			PWC	O
4S/2W-16A004		N	ALAMEDA COUNTY WATER DISTRICT	3/28/2011	4.71		- -			PWC flooded well box	O
4S/2W-16C011	E-19	N	ALAMEDA COUNTY WATER DISTRICT	3/24/2011	14.16	8.36	- -			PWC	O
4S/2W-16J002	E-23	N	ALAMEDA COUNTY WATER DISTRICT	3/29/2011	8.38		- -			PWC	O
4S/2W-16K001		CF	MUNSTER (LU 18441)	3/31/2011	7.85	3.65	- -				DP
4S/2W-16L011	E-26	N	ALAMEDA COUNTY WATER DISTRICT	- -	3.34		- -			NA PWC flooded	O
4S/2W-16L014	E-101	N	ALAMEDA COUNTY WATER DISTRICT	3/24/2011	8.5	6.1	- -			PWC	O
4S/2W-16L015	Site E	N	ALAMEDA COUNTY WATER DISTRICT	3/24/2011	11.82	6.02	- -				ARP
4S/2W-16Q001	E-27	N	ALAMEDA COUNTY WATER DISTRICT	3/31/2011	9.13	7.13	- -			M PWC	O
4S/2W-21B007	Site D	N	ALAMEDA COUNTY WATER DISTRICT	3/28/2011	10.94	7.44	- -				ARP
4S/2W-21G001		CF	ALAMEDA COUNTY FLOOD CONTROL	3/28/2011	8.08	2.78	- -			UTS	DP
4S/2W-21G004	E-31	N	ALAMEDA COUNTY WATER DISTRICT	3/28/2011	8.79	7.09	- -			PWC	O
4S/2W-21G009	E-109	N	ALAMEDA COUNTY WATER DISTRICT	3/28/2011	8.96	7.56	3/29/2011	2,600	4,680	PWC	O
4S/2W-21J001		CF	ALAMEDA COUNTY FLOOD CONTROL	3/29/2011	7.07	3.17	- -				DP
4S/2W-21N001	E-40	N	ALAMEDA COUNTY WATER DISTRICT	3/30/2011	5.49	5.09	- -			PWC	O
4S/2W-21P001		C	ALAMEDA COUNTY FLOOD CONTROL	3/28/2011	8.17	0.87	- -			OBS@140' PWC	O
4S/2W-21P003	E-39	N	ALAMEDA COUNTY WATER DISTRICT	3/30/2011	3.96		- -			M PWC	O
4S/2W-21Q001		CF	ALAMEDA COUNTY FLOOD CONTROL	3/29/2011	5.73	2.53	- -			PWC	AB
4S/2W-21Q002	E-36	N	ALAMEDA COUNTY WATER DISTRICT	3/29/2011	5.57		- -			M PWC	O
4S/2W-22H003		N	ALAMEDA COUNTY WATER DISTRICT	3/28/2011	18.16	11.66	- -			PWC	O
4S/2W-22J001		CF	Founders Title Co	3/28/2011	13.09	3.89	- -			OBS@27'	A
4S/2W-22P002	#8	CF	EAST BAY REGIONAL PARK DIST.	3/28/2011	10.91	3.41	- -			OFF UTS OBS@26'	A
4S/2W-23F002		CF	CITY OF FREMONT	3/29/2011	15.76	3.96	- -				A
4S/2W-23J002		N	ALAMEDA COUNTY WATER DISTRICT	3/24/2011	24.14	14.44	- -			PWC	O
4S/2W-24A007		CF	DINO R & RINA M CIARLO	3/30/2011	42.7	3	- -			T	D
4S/2W-24F011		N	LEONARD GEORGE	3/30/2011	30.01	16.31	- -				A
4S/2W-24L001		CF	O.G. JOHNSON	- -	31.63		- -			NMP PI UTM UTS	D
4S/2W-24L003		C	Sohan S & Bhupinder K Virdee	3/21/2011	33.43	2.93	- -			well runs periodically	A
4S/2W-24L006		F	MASUKUNI KITANI	3/21/2011	32	2.5	- -			T well pumps periodically	D
4S/2W-25D001	CLSTR#1	D	ALAMEDA COUNTY WATER DISTRICT	3/21/2011	22.23	0.53	- -			PWC transducer	O
4S/2W-25D002	CLSTR#1	CF	ALAMEDA COUNTY WATER DISTRICT	3/21/2011	23.47	2.27	- -			PWC	O
4S/2W-25D003	CLSTR#1	N	ALAMEDA COUNTY WATER DISTRICT	3/21/2011	22.99	13.59	- -			PWC	O
4S/2W-25M001		N	ALAMEDA COUNTY WATER DISTRICT	3/21/2011	22.14	12.24	4/5/2011	180	558	PWC	O
4S/2W-26H001		D	EAST BAY REGIONAL PARK DIST.	3/21/2011	19.94	1.74	- -			OFF	A
4S/2W-26K004	CLSTR#2	D	ALAMEDA COUNTY WATER DISTRICT	3/21/2011	20.31	1.61	- -			PWC	O
4S/2W-26K005	CLSTR#2	CF	ALAMEDA COUNTY WATER DISTRICT	3/21/2011	19.91	1.41	- -			PWC	O
4S/2W-26K006	CLSTR#2	N	ALAMEDA COUNTY WATER DISTRICT	3/21/2011	19.77	11.57	- -			PWC Needs new morrison cap	O
4S/2W-26L001	CLSTR#3	D	ALAMEDA COUNTY WATER DISTRICT	3/21/2011	15.74	1.24	3/30/2011	290	840	PWC	O
4S/2W-26L002	CLSTR#3	CF	ALAMEDA COUNTY WATER DISTRICT	3/21/2011	15.26	0.96	3/30/2011	1,200	2,138	PWC	O
4S/2W-26M008	CLSTR#3	N	ALAMEDA COUNTY WATER DISTRICT	3/21/2011	14.38	8.78	3/30/2011	180	912	M PWC	O
4S/2W-27L001	#10	CF	Founders Title Co.	3/30/2011	9.18	1.58	- -				A
4S/2W-27L004	#12	CF	Founders Title Co.	3/30/2011	9.6	1.2	- -				A
4S/2W-28A001	E-37	N	ALAMEDA COUNTY WATER DISTRICT	3/30/2011	6.97	5.97	- -			PWC	O
4S/2W-28C001	E-42	N	ALAMEDA COUNTY WATER DISTRICT	3/28/2011	4.69		- -			PWC	O
4S/2W-28D001	E-43	N	ALAMEDA COUNTY WATER DISTRICT	3/28/2011	4.84		- -			PWC	O
4S/2W-28G001	E-41	N	ALAMEDA COUNTY WATER DISTRICT	3/28/2011	6.71	5.21	- -			PWC	O
4S/2W-35B002		N	ALAMEDA COUNTY WATER DISTRICT	3/28/2011	15.05	11.75	- -			OBS@85' PWC	O
4S/2W-36A006	Darvon #1	N	ALAMEDA COUNTY WATER DISTRICT	3/30/2011	34.06	13.96	- -			OFF scada	M, ARP
4S/2W-36A007	Darvon #2	CF	ALAMEDA COUNTY WATER DISTRICT	- -	33.6		3/9/2011	270	748	RUN UTM scada	M, ARP
4S/2W-36F005	PIEZ#5	N	ALAMEDA COUNTY WATER DISTRICT	3/24/2011	21.43	12.23	- -			PWC	O
4S/2W-36N006		N	ALAMEDA COUNTY WATER DISTRICT	3/24/2011	14.67	11.27	- -			PWC	O
4S/2W-36N010	Well T	F	ALAMEDA COUNTY WATER DISTRICT	3/23/2011	16.77	-0.33	3/23/2011	1,200	2,016	PWC	O
4S/2W-36N011	Well U	C	ALAMEDA COUNTY WATER DISTRICT	3/23/2011	17.5	-4.7	3/23/2011	430	960	PWC	O

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Well Numbers	Alternate Well I.D.	Aquifer	Owner	Date of Water Level	Reference Elevation (feet msl)	Water Elevation (feet msl)	Water Sample Date	Chloride Result (ppm)	TDS (ppm)	Remarks	Well Type
4S/2W-36N012	Well V	N	ALAMEDA COUNTY WATER DISTRICT	3/23/2011	15.86	11.66	3/23/2011	6,400	11,600	PWC	O
5S/1W-02N001		N	Dean A. & Donna H. Olsen	3/28/2011	38.01	26.01	- -				D
5S/1W-03C007		CF	PRESBYTERY OF SAN FRANCISCO	3/22/2011	50.39	0.59	- -			T	D
5S/1W-03G003		N	LEONCIO H & MAGDELENA C ISLAYA	- -	49.24		- -			EPD NMP OBS@surface	D
5S/1W-04H003	PIEZ#9	N	ALAMEDA COUNTY WATER DISTRICT	3/21/2011	42.88	12.48	- -			PWC	O
5S/1W-04H004	Robin & Ladner	C	Alameda County Water District	3/21/2011	45.11	0.41	3/23/2011	300	982	PWC	
5S/1W-04H005	Robin & Ladner	F	Alameda County Water District	3/21/2011	44.92	1.22	3/23/2011	230	716	PWC	
5S/1W-04P002		N	ALAMEDA COUNTY WATER DISTRICT	3/21/2011	28.16	12.26	- -			PWC	O
5S/1W-05B001		N	ALAMEDA COUNTY WATER DISTRICT	3/21/2011	38.26	12.56	- -			PWC	O
5S/1W-05C001	Farwell	CF	ALAMEDA COUNTY WATER DISTRICT	- -	38.29		3/9/2011	670	1,560	RUN transducer	M, ARP
5S/1W-05H003	WELL C-1	D	Alameda County Water District	3/21/2011	34.31	1.11	- -			M PWC needs new coupling	
5S/1W-05H004	WELL D-1	F	Alameda County Water District	3/21/2011	34.25	0.95	- -			PWC	
5S/1W-05H005	WELL E-1	C	Alameda County Water District	3/21/2011	34.31	-0.89	- -			PWC	
5S/1W-05H006	WELL F-1	N	Alameda County Water District	3/21/2011	34.29	12.29	- -			PWC	
5S/1W-05M001	PIEZ#7	N	ALAMEDA COUNTY WATER DISTRICT	3/22/2011	29.42	11.82	- -			M PWC needs new fitting & well ID	O
5S/1W-06H001		CF	Sam L. Arnold	- -	28.54		- -			EPD NA UTS C.O.N. gated area	O
5S/1W-06H004	Bellflower	CF	ALAMEDA COUNTY WATER DISTRICT	- -	30.25		3/9/2011	630	1,526	RUN	M, ARP
5S/1W-06N006	Site B	N	ALAMEDA COUNTY WATER DISTRICT	3/21/2011	21.04	11.24	- -				ARP
5S/1W-06N007		CF	ALAMEDA COUNTY WATER DISTRICT	3/21/2011	21.65	-4.85	- -			PWC UTS	O
5S/1W-07B036	Silliman - MW	C	Alameda County Water District	3/21/2011	16	-4.4	3/25/2011	240	625	PWC	O
5S/1W-07G010	Y	D	Alameda County Water District	3/21/2011	13.06	0.16	- -			PWC	
5S/1W-07H002		CF	Brook R. & Forrest E. Heath	- -	10.37		- -			EPD NA UTS flooded	A
5S/1W-07H003		N	ALAMEDA COUNTY WATER DISTRICT	3/21/2011	10.61		- -			OBS@15' PWC	O
5S/1W-07J001	E-77	N	ALAMEDA COUNTY WATER DISTRICT	3/21/2011	9.51		- -			M PWC	O
5S/1W-07J003	Site A	N	ALAMEDA COUNTY WATER DISTRICT	3/21/2011	11.48	9.78	- -			OFF	ARP
5S/1W-07J005	Site A -MW	F	Alameda County Water District	3/21/2011	11.45	1.25	3/25/2011	10	369	PWC	O
5S/1W-08D001	E-117	N	ALAMEDA COUNTY WATER DISTRICT	3/21/2011	18.15	10.95	- -			PWC	O
5S/1W-08G002	E-81	N	ALAMEDA COUNTY WATER DISTRICT	3/21/2011	15.36	10.86	- -			M PWC OBS	O
5S/1W-08N003	E-79	N	ALAMEDA COUNTY WATER DISTRICT	- -	10.27		- -			M OBS@4.0 PWC well damaged	O
5S/1W-08P004	E-82	N	ALAMEDA COUNTY WATER DISTRICT	3/22/2011	8.7		- -			M PWC Pumps sand	O
5S/1W-10K002		CF	SOUTHLAKE MOBIL HOME PARK	- -	26.96		- -			NMP	A
5S/1W-14B003		N	J.C. & A.C. LOPES	3/22/2011	38.26	18.86	- -				A
5S/1W-16M006	AutoMall-C	C	ALAMEDA COUNTY WATER DISTRICT	3/23/2011	11.67	0.17	3/24/2011	940	1,772	M PWC need well no.'s repainted	
5S/1W-16M007	AutoMall-F	F	ALAMEDA COUNTY WATER DISTRICT	3/23/2011	11.91	0.61	3/24/2011	12	390	M PWC need well no's repainted	
5S/1W-16M008	AutoMall D1	D	ALAMEDA COUNTY WATER DISTRICT	3/23/2011	11.86	1.86	3/24/2011	11	344	M PWC need well no's repainted	
5S/1W-17A003	E-115	N	Alameda County Water District	3/23/2011	10.2		- -			PWC	O
5S/1W-17J001		CF	OAKLAND SCAVENGER CO.	- -	6.47		- -			RUN T	I
5S/1W-17J006	E-113	N	Alameda County Water District	- -	6.25		- -			NA PWC flooded	O
5S/1W-22H001	E-100	N	Alameda County Water District	3/22/2011	10.42	5.12	- -			OBS@70' PWC	O
5S/2W-01B002		C	J.S. OLIVEIRA	3/28/2011	18.59	-8.31	- -			PWC OBS@85'	AB
5S/2W-01E007		N	SERAFINA M. MENDES	- -	16.86		- -			NMP UTM UTS	D
5S/2W-01R001	E-68	N	ALAMEDA COUNTY WATER DISTRICT	3/29/2011	16.31	11.41	- -			PWC	O
5S/2W-01R014		C	Alameda County Water District	3/24/2011	15.08	-7.92	4/6/2011	990	1,644	PWC	
5S/2W-02E002	E-104	N	ALAMEDA COUNTY WATER DISTRICT	3/22/2011	5.09	3.09	4/1/2011	6,800	11,060	PWC	O
5S/2W-02F003	Well W	C	ALAMEDA COUNTY WATER DISTRICT	3/21/2011	10.36	-2.14	4/1/2011	640	1,312	PWC	O
5S/2W-02F004	Well X	N	ALAMEDA COUNTY WATER DISTRICT	3/21/2011	10.34	8.14	4/1/2011	780		PWC	O
5S/2W-02M006	E-51	N	ALAMEDA COUNTY WATER DISTRICT	3/22/2011	7.93	3.73	- -			PWC	O
5S/2W-02M007	Site C	N	ALAMEDA COUNTY WATER DISTRICT	3/22/2011	11.08	4.48	- -			UTS	ARP
5S/2W-02Q001		N	ALAMEDA COUNTY WATER DISTRICT	3/22/2011	9.5	7.5	- -			M PWC well lid damaged	O
5S/2W-03G001	E-44	N	Alameda County Water District	3/22/2011	6.9	5	- -			PWC	O
5S/2W-03H002	E-47	N	Alameda County Water District	3/22/2011	4.89	4.69	- -			PWC	O
5S/2W-11H002	E-60	N	Alameda County Water District	3/22/2011	9.47	6.17	- -			PWC	O
5S/2W-12B008		D	LESLIE SALT CO.	- -	12.49		- -			UTM capped M.P.	I
5S/2W-12B009		D	MORTON SALT	- -	14.82		- -			NMP UTM UTS Morton not using well	I

Alameda County Water District
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Well Numbers	Alternate Well I.D.	Aquifer	Owner	Date of Water Level	Reference Elevation (feet msl)	Water Elevation (feet msl)	Water Sample Date	Chloride Result (ppm)	TDS (ppm)	Remarks	Well Type
5S/2W-12C003	E-62	N	Alameda County Water District	3/22/2011	10.1	6.6	- -			PWC	O
5S/2W-14E005	DE1-D1	D	ALAMEDA COUNTY WATER DISTRICT	3/29/2011	7.92		- -			PWC	
5S/2W-14E006	DE1-F	F	Alameda County Water District	3/29/2011	7.96		- -			PWC	
5S/2W-14E007	DE1-C	C	ALAMEDA COUNTY WATER DISTRICT	3/29/2011	7.77		- -			PWC	
5S/2W-14E008	DE1-N	N	ALAMEDA COUNTY WATER DISTRICT	3/29/2011	7.75	3.55	- -			PWC	
5S/2W-14E009	DE1-D2	D	ALAMEDA COUNTY WATER DISTRICT	3/29/2011	7.88		- -			PWC	
5S/2W-17F002		N	LESLIE SALT CO.	3/22/2011	7.7	4.7	- -			PWC	O
5S/2W-17F003		CF	LESLIE SALT CO.	3/22/2011	7.8	4.5	- -			PWC	O

APPENDIX D

FALL 2011 GROUNDWATER MONITORING RECORDS

Alameda County Water District
Groundwater Monitoring Program
Fall 2011

Well Numbers	Alternate Well I.D.	Aquifer	Owner	Date of Water Level	Reference Elevation (feet msl)	Water Elevation (feet msl)	Water Sample Date	Chloride Result (ppm)	TDS (ppm)	Remarks	Well Type
3S/3W-25C020	WD2	D	Alameda County Water District	9/1/2011	8.84	-4.3	9/1/2011	87	457	PWC	O
4S/1W-07K001		D	Masonic Homes of California	8/30/2011	67.4	0.6	- -			PI	A
4S/1W-07N005		CF	City of Union City	8/30/2011	55.29	0.0	- -			UTS	A
4S/1W-17M006	Well L	D	ALAMEDA COUNTY WATER DISTRICT	8/30/2011	49.9	-3.3	8/24/2011	140	537	PWC	O
4S/1W-17M007	Well M	CF	ALAMEDA COUNTY WATER DISTRICT	8/30/2011	50	-0.2	8/24/2011	84	486	PWC	O
4S/1W-17M008	Well N	N	ALAMEDA COUNTY WATER DISTRICT	8/30/2011	49.62	15.3	8/24/2011	81	427	PWC	O
4S/1W-18K005		CF	City of Union City	- -	48.6		- -			DA NMP UTM UTS	A
4S/1W-18M010		CF	Frank J & Catherine M Thrall	8/30/2011	39.92	-1.3	- -				D
4S/1W-18N004		CF	Eleanor Kabrich	8/30/2011	41.6	-1.8	- -			T	D
4S/1W-19A003		F	Alameda County Flood Control	9/1/2011	54.37	-4.8	- -				I
4S/1W-19E002	PIEZ#4	N	ALAMEDA COUNTY WATER DISTRICT	8/30/2011	37.95	15.1	8/25/2011	85	445	PWC	O
4S/1W-19J006		N	Alameda County Flood Control	- -	51.28		- -			PWC UTM	
4S/1W-19L002		CF	ALAMEDA COUNTY WATER DISTRICT	9/27/2011	40.39	-2.5	8/25/2011	75	419	PWC pumped at 160'	O
4S/1W-19N002	Well H	D	ALAMEDA COUNTY WATER DISTRICT	8/30/2011	40.45	-3.8	9/12/2011	480	1,216	PWC	O
4S/1W-19N003		CF	CITY OF FREMONT	8/30/2011	39.81	-3.9	9/12/2011	230	702	PWC	O
4S/1W-19N004	Well I	F	ALAMEDA COUNTY WATER DISTRICT	8/30/2011	40.68	-4.1	9/12/2011	260	730	PWC	O
4S/1W-19N005	Well J	C	ALAMEDA COUNTY WATER DISTRICT	8/30/2011	40.55	-3.2	9/12/2011	69	424	PWC	O
4S/1W-19N014	Well K	N	ALAMEDA COUNTY WATER DISTRICT	8/30/2011	40.5	14.9	9/12/2011	84	439	PWC	O
4S/1W-20A003	Nursery Well	CF	ALAMEDA COUNTY WATER DISTRICT	9/9/2011	63.42	1.8	8/31/2011	86	490		M
4S/1W-20G001		CFD	Alameda County Water District	8/30/2011	60.72	0.5	- -			UTS	AB
4S/1W-20H003		N	ALAMEDA COUNTY WATER DISTRICT	8/30/2011	67.52	19.5	- -			OBS PWC	O
4S/1W-20J004	UP-1A	N	ALAMEDA COUNTY WATER DISTRICT	9/1/2011	58.9	20.4	- -			smaller lid	O
4S/1W-20J005	UP-1C	N	ALAMEDA COUNTY WATER DISTRICT	9/1/2011	59.14	16.7	8/24/2011	83	446	PWC smaller lid, well-left most facing creek	O
4S/1W-20J006	UP-1B	N	ALAMEDA COUNTY WATER DISTRICT	9/1/2011	59.07	20.8	- -			PWC smaller lid	O
4S/1W-20R003	UP-2A	N	ALAMEDA COUNTY WATER DISTRICT	9/1/2011	59.11	19.1	- -			PWC UTS	O
4S/1W-20R004	UP-2B	N	ALAMEDA COUNTY WATER DISTRICT	9/1/2011	59.2	17.4	- -			PWC	O
4S/1W-20R005	UP-2C	N	ALAMEDA COUNTY WATER DISTRICT	9/1/2011	59.06	16.4	- -			PWC	O
4S/1W-21H002		AHF	Alameda County Water District	9/1/2011	75.08	44.5	- -			PWC	O
4S/1W-21K005		AHF	Alameda County Water District	- -	69.83		- -			Destroyed	
4S/1W-21L003		AHF	ALAMEDA COUNTY WATER DISTRICT	9/1/2011	66.57	39.4	- -			NA transducer, flooded	
4S/1W-21L006		AHF	ALAMEDA COUNTY WATER DISTRICT	9/1/2011	67.81	39.6	- -			transducer	O
4S/1W-21L007		AHF	ALAMEDA COUNTY WATER DISTRICT	9/1/2011	70.62	40.1	- -			transducer	
4S/1W-21L008		AHF	ALAMEDA COUNTY WATER DISTRICT	- -	66.94		- -			NA gate difficult to open	
4S/1W-21P004		AHF	CITY OF FREMONT	9/1/2011	65.29	28.4	- -			EPD UTS	AB
4S/1W-21P006	P.T. #1	AHF	ALAMEDA COUNTY WATER DISTRICT	- -	66.37		9/21/2011	80	597	RUN	M
4S/1W-21P007	P.T. #2	AHF	ALAMEDA COUNTY WATER DISTRICT	- -	66.77		8/30/2011	76	496	NMP UTM	M
4S/1W-21P008	P.T. #3	AHF	ALAMEDA COUNTY WATER DISTRICT	9/2/2011	66.54	35.6	9/12/2011	79	523	RUN	M
4S/1W-21P009	P.T. #4	AHF	ALAMEDA COUNTY WATER DISTRICT	- -	66.44		9/21/2011	74	522	OFF	M
4S/1W-21P010	P.T. #5	AHF	ALAMEDA COUNTY WATER DISTRICT	9/2/2011	67.28	36.5	9/12/2011	78	472	OFF	M
4S/1W-21P011	P.T. #6	AHF	ALAMEDA COUNTY WATER DISTRICT	9/2/2011	67.69	36.8	9/21/2011	81	472	RUN	M
4S/1W-21P012	P.T. #7	AHF	ALAMEDA COUNTY WATER DISTRICT	- -	68.36		- -			NMP Rehab	M
4S/1W-21P013	P. T. #8	AHF	ALAMEDA COUNTY WATER DISTRICT	9/2/2011	68.86	37.2	9/21/2011	87	490	OFF	M
4S/1W-21R007		AHF	Alameda County Water District	9/1/2011	72.21	34.0	9/28/2011	63	428	PWC	
4S/1W-22P006		AHF	ALVIN MARTIN	9/1/2011	80.61	40.5	- -			RUN T CUST REQ. RESULTS WHEN SAMPLED, IF POSS	A, D
4S/1W-26Q011		AHF	ERNIE SILVA	9/9/2011	96.44	76.0	9/9/2011	72	618	T	D
4S/1W-27A002		AHF	Fremont Community Church	9/9/2011	71.09	40.0	9/9/2011	100	938		
4S/1W-27D008	AHF Indicator	AHF	ALAMEDA COUNTY WATER DISTRICT	9/27/2011	66.59	38.3	9/28/2011	74	748	PWC	O
4S/1W-27E001		AHF	CHURCH OF JESUS CHRIST	9/1/2011	62.86	39.4	- -			PI T UTS	D
4S/1W-27P001		AHF	CITY OF FREMONT	9/8/2011	54.04	40.5	9/8/2011	96	870		M
4S/1W-27P002		AHF	CITY OF FREMONT	9/8/2011	52.65	37.8	- -				A
4S/1W-28C001	Mowry #1	N	ALAMEDA COUNTY WATER DISTRICT	- -	64.81		9/12/2011	87	542	RUN	M

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Well Numbers	Alternate Well I.D.	Aquifer	Owner	Date of Water Level	Reference Elevation (feet msl)	Water Elevation (feet msl)	Water Sample Date	Chloride Result (ppm)	TDS (ppm)	Remarks	Well Type
4S/1W-28C014	Mowry #2	D	ALAMEDA COUNTY WATER DISTRICT	- -	63.64		9/26/2011	140	536	RUN transducer	M
4S/1W-28C015	Mowry #3	CF	ALAMEDA COUNTY WATER DISTRICT	9/2/2011	63.87	-5.4	- -			Rehab	M
4S/1W-28C016	Mowry #4	N	ALAMEDA COUNTY WATER DISTRICT	9/2/2011	66.08	9.4	9/12/2011	80	503	OFF	M
4S/1W-28C018	Mowry #6	CF	ALAMEDA COUNTY WATER DISTRICT	9/2/2011	64.8	-6.0	9/12/2011	120	578	OFF	M
4S/1W-28C019	Mowry #7	N	ALAMEDA COUNTY WATER DISTRICT	9/2/2011	63.82	11.3	- -			OFF	M
4S/1W-28C020	Mowry #8	N	ALAMEDA COUNTY WATER DISTRICT	9/2/2011	64.13	9.8	- -			OFF transducer	M
4S/1W-28C021	Mowry #9	CF	ALAMEDA COUNTY WATER DISTRICT	9/2/2011	65.02	-6.0	8/30/2011	86	487	OFF transducer	M
4S/1W-28D001	Well A	D	ALAMEDA COUNTY WATER DISTRICT	9/2/2011	63.03	-7.6	9/13/2011	97	455	PWC	O
4S/1W-28D008	Well B	F	ALAMEDA COUNTY WATER DISTRICT	9/2/2011	62.77	-7.3	9/13/2011	100	499	PWC	O
4S/1W-28D011	Well C	C	ALAMEDA COUNTY WATER DISTRICT	9/2/2011	62.9	-4.5	9/13/2011	80	440	PWC	O
4S/1W-28D012	Well D	N	ALAMEDA COUNTY WATER DISTRICT	9/2/2011	62.86	13.0	9/13/2011	88	467	PWC	O
4S/1W-28F005		D	WASHINGTON TOWNSHIP HOSPITAL DIST	9/7/2011	61.6	-7.7	- -			T	I
4S/1W-28F018		N	Alameda County Water District	9/8/2011	58.71	13.1	9/29/2011	43	510	PWC	
4S/1W-28F024	BART WAY-F	F	ALAMEDA COUNTY WATER DISTRICT	9/8/2011	59.15	-8.3	9/29/2011	190	846	PWC	O
4S/1W-28H007		AHF	SAL R. GUARDINO	9/8/2011	63.04	39.0	9/8/2011	77	826	RUN T	A
4S/1W-28M002		N	Alameda County Water District	9/2/2011	53.81	13.6	9/2/2011	80	546	PWC	
4S/1W-28M005		D	Alameda County Water District	9/2/2011	54.12	-6.6	9/2/2011	140	535	PWC	
4S/1W-28M006		CF	Mercedes Williams	9/2/2011	57.09	-6.7	- -			PI UTS	D
4S/1W-28M009		F	Alameda County Water District	9/2/2011	54.21	-6.1	9/2/2011	640	1,436	PWC	
4S/1W-28M010		C	Alameda County Water District	9/2/2011	54.2	-4.6	9/2/2011	140	693	PWC Barologger	
4S/1W-28P001		CF	Central Realty Company	- -	55.62		- -			OBS@60' PWC UTS	AB
4S/1W-28P004	BEACON	C	ALAMEDA COUNTY WATER DISTRICT	9/7/2011	53.56	-5.7	8/25/2011	88	670	PWC	O
4S/1W-28P006	Well E	D	ALAMEDA COUNTY WATER DISTRICT	9/7/2011	53.66	-7.3	8/25/2011	190	608	PWC	O
4S/1W-28P007	Well F	F	ALAMEDA COUNTY WATER DISTRICT	9/7/2011	53.5	-7.9	8/25/2011	1,000	2,136	PWC	O
4S/1W-28P008	Well G	N	ALAMEDA COUNTY WATER DISTRICT	9/7/2011	53.53	13.1	8/25/2011	88	692	PWC	O
4S/1W-28R003	Fmt. Library F	F	Alameda County Water District	9/7/2011	59.7	-6.9	8/24/2011	170	934	PWC Well box flooded	
4S/1W-29A006	BHF Indicator	N	ALAMEDA COUNTY WATER DISTRICT	9/27/2011	61.23	14.0	9/28/2011	81	461	PWC	O
4S/1W-29C007		N	ALAMEDA COUNTY WATER DISTRICT	- -	55.25		- -			NA	O
4S/1W-29C008		N	ALAMEDA COUNTY WATER DISTRICT	- -	57.41		- -			NA	O
4S/1W-29F002		N	Robert D & Virginia W. Grate	8/30/2011	51.93	14.9	- -			PWC	AB
4S/1W-29H002	Centerville Par	F	ALAMEDA COUNTY WATER DISTRICT	9/1/2011	52.44	-7.1	9/20/2011	110	463	PWC	O
4S/1W-29J003		CF	CITY OF FREMONT	- -	55.28		- -			NMP UTM UTS	A, M
4S/1W-29J008		N	CALDEIRA, ELAINE T. & ROBERT A.	9/1/2011	58.48	13.1	- -			PI T UTS	D
4S/1W-29L012	Fremont Mattos	D	ALAMEDA COUNTY WATER DISTRICT	9/9/2011	50.62	-8.3	- -			M PWC Need 2" pipe	O
4S/1W-30A002	Well O	FD	ALAMEDA COUNTY WATER DISTRICT	9/7/2011	51.81	-5.7	9/12/2011	220	639	PWC transducer	O
4S/1W-30A004	Well Q	C	ALAMEDA COUNTY WATER DISTRICT	9/7/2011	52.01	-3.4	9/12/2011	81	439	PWC	O
4S/1W-30A005	Well R	N	ALAMEDA COUNTY WATER DISTRICT	9/7/2011	52.2	14.2	9/12/2011	82	430	PWC	O
4S/1W-30E003	CORONADO 2	D	ALAMEDA COUNTY WATER DISTRICT	9/7/2011	42.12	-5.3	9/23/2011	190	608	PWC transducer(Minitroll)	O
4S/1W-30E004	CORONADO 1	N	ALAMEDA COUNTY WATER DISTRICT	9/7/2011	42.17	13.5	9/23/2011	150	702	PWC	O
4S/1W-30J002		N	Jeffery H. Lee	9/7/2011	46.74	13.8	- -			PWC	O
4S/1W-30L006		D	Joseph G. Dutra	9/7/2011	42.23	-4.7	- -			UTS , call first for permission	A
4S/1W-30L008		N	Joseph G. Dutra	9/7/2011	41.9	13.9	- -			UTS , call first for permission	AB
4S/1W-30R002		CF	Frank G. & Alice C. Garcia	- -	46.14		- -			DA PI T	O
4S/1W-30R004		N	Frank G. & Alice C. Garcia	9/7/2011	45.19	13.4	- -			PWC	AB
4S/1W-31B003	Willowood #1	D	ALAMEDA COUNTY WATER DISTRICT	9/27/2011	43.54	-5.2	9/28/2011	310	818	PWC	ARP
4S/1W-31B011	Willowood # 2	CF	ALAMEDA COUNTY WATER DISTRICT	9/9/2011	44.47	-8.4	- -			UTS	ARP, O
4S/1W-31C003		N	ALAMEDA COUNTY WATER DISTRICT	9/9/2011	36.56	13.1	9/12/2011	96	578	PWC	O
4S/1W-31J001		D	GLENMOOR GARDENS HOMEOWNERS ASSOCIA	9/8/2011	38.94	-2.0	9/8/2011	320	796	T	D
4S/1W-31L008		N	Alameda County Water District	9/9/2011	36.76	12.3	9/12/2011	130	633	PWC	
4S/1W-31L009		N	Alameda County Water District	9/9/2011	33.94	12.2	8/23/2011	110	644	PWC	
4S/1W-31N001	Cedar #1	CF	ALAMEDA COUNTY WATER DISTRICT	- -	35.37		8/8/2011	480	1,272	RUN UTM	M,ARP

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Well Numbers	Alternate Well I.D.	Aquifer	Owner	Date of Water Level	Reference Elevation (feet msl)	Water Elevation (feet msl)	Water Sample Date	Chloride Result (ppm)	TDS (ppm)	Remarks	Well Type
4S/1W-31N003	Cedar #2	N	ALAMEDA COUNTY WATER DISTRICT	- -	35.2		9/14/2011	210	926	RUN UTM	M,ARP
4S/1W-32E011	Meyer Park - C	C	Alameda County Water District	9/7/2011	43.68	-8.2	9/21/2011	200	684	PWC	
4S/1W-32E012	Meyer Park - F	F	Alameda County Water District	9/7/2011	43.89	-6.6	9/21/2011	450	1,168	PWC	
4S/1W-32K011	Serra Place-F	F	Alameda County Water District	9/1/2011	43.39	-6.2	8/25/2011	810	1,804	PWC	O
4S/1W-32K014	Serra-C	C	Alameda County Water District	9/1/2011	43.28	-8.1	8/25/2011	760	1,856	PWC	O
4S/1W-32M010		N	ALAMEDA COUNTY WATER DISTRICT	9/8/2011	38.67	12.8	9/21/2011	130	1,272	PWC	O
4S/1W-32N001	Blacow - C	C	Alameda County Water District	9/7/2011	37.65	-10.1	8/30/2011	150	621	PWC	
4S/1W-32N002	Blacow - F	F	Alameda County Water District	9/7/2011	37.59	-7.2	8/30/2011	1,800	2,690	PWC	
4S/1W-33N002	Knoll Park	C	ALAMEDA COUNTY WATER DISTRICT	9/8/2011	43.75	-7.3	9/20/2011	1,000	2,295	PWC	O
4S/1W-33N003	Knoll Park - F	F	Alameda County Water District	9/8/2011	43.64	-7.1	9/20/2011	260	770	PWC	
4S/1W-33R007	Margery/Bl - C	C	Alameda County Water District	9/8/2011	53.25	-6.2	9/12/2011	120	802	PWC	
4S/1W-33R008	Margery/Bl - F	F	Alameda County Water District	9/8/2011	53.18	-6.3	9/12/2011	180	800	PWC	
4S/1W-34A002		AHF	Elsie Nines	9/7/2011	60	50.4	- -			T	D
4S/1W-34C001		AHF	CITY OF FREMONT	- -	61.3		9/8/2011	200	1,074	NMP UTM	MR
4S/1W-35R003		AHF	Mary A Souza	9/7/2011	190.16	176.7	- -			T UTS no sample point	D
4S/2W-02H001		D	Bay Area Rapid Transit District	9/1/2011	36.21	-4.6	- -			T UTS	I
4S/2W-03R003		CF	F E DUBOIS	8/29/2011	12	-1.0	8/29/2011	33	343	T tape	D, I
4S/2W-04E002	E-3	N	ALAMEDA COUNTY WATER DISTRICT	8/29/2011	4.72	-4.2	- -			PWC	O
4S/2W-04F001	Well B	D	City of Hayward	- -	0		8/30/2011	44	379		
4S/2W-04F006	Hayward E	D	City of Hayward	- -	0		8/30/2011	110	495		
4S/2W-04R001	Hayward C	D	City of Hayward	- -	0		8/30/2011	180	578		
4S/2W-05G001	Eden Landing F1	F	Alameda County Water District	9/8/2011	6.75	-2.0	9/8/2011	67	416	PWC	O
4S/2W-05G002	Eden Landing D1	D	Alameda County Water District	9/8/2011	6.35	-4.4	9/8/2011	90	453	PWC	O
4S/2W-05G003	Eden Landing D2	D	Alameda County Water District	9/8/2011	5.82	-7.9	9/8/2011	510	1,240	PWC	O
4S/2W-05G004	Eden Landing C2	C	Alameda County Water District	9/8/2011	6.73	3.3	9/8/2011	57	441	PWC	O
4S/2W-05G005	Eden Landing	C	Alameda County Water District	8/30/2011	6.93	7.9	9/8/2011	170	619	PWC	O
4S/2W-08Q001	2D2	D	Alameda County Water District	8/31/2011	9.25	-1.4	8/31/2011	210	762	PWC Minitroll transducer	O
4S/2W-09F014	Veasy Bridgegat	D	Alameda County Water District	8/31/2011	8.25	-4.0	8/31/2011	670	1,492	PWC solinst transducer	O
4S/2W-09L002	E-12	N	ALAMEDA COUNTY WATER DISTRICT	8/31/2011	9.11	0.2	8/31/2011	3,000	5,210	PWC	O
4S/2W-09P010	E-17	N	ALAMEDA COUNTY WATER DISTRICT	8/31/2011	11.31	2.8	8/31/2011	6,800	12,600	PWC	O
4S/2W-10E004	Tidewater	D	Alameda County Water District	9/1/2011	14.54	-4.8	9/2/2011	120	517	PWC Solinst transducer	O
4S/2W-11A003		D	U.S. PIPE HOLDINGS CORPORATION	- -	40.58		9/1/2011	89	456	NMP RUN	I
4S/2W-12C001	Whipple Well	D	ALAMEDA COUNTY WATER DISTRICT	8/30/2011	68.61	-4.5	8/31/2011	110	482	RUN transducer	M
4S/2W-12K008		D	Alameda County Water District	8/31/2011	53.11	-4.7	9/20/2011	40	358	PWC Transducer(minitroll)	
4S/2W-12K009		F	Alameda County Water District	8/31/2011	53.41	-3.1	9/20/2011	140	582	PWC	
4S/2W-12K010		C	Alameda County Water District	8/31/2011	53.39	-1.8	9/20/2011	76	556	PWC	
4S/2W-12K011		N	Alameda County Water District	8/31/2011	53.67	15.1	9/20/2011	33	368	PWC	
4S/2W-13C004		CF	MANUEL SOARES	9/8/2011	33.56	1.4	9/8/2011	75	429	OBS@38' T	A, D
4S/2W-13E003		N	ALAMEDA COUNTY FLOOD CONTROL	8/31/2011	27.93	13.4	- -			PWC	O
4S/2W-13H004		N	CITY OF UNION CITY	- -	37.55		9/6/2011	95	592	NMP UTM	M
4S/2W-13K004		C	RAYMOND N. NELSEN	9/6/2011	35.04	-4.9	9/6/2011	140	732	T	D
4S/2W-13K005		CF	JUANA & CATALINA ALVARDO	- -	36.32		- -			DA T	D
4S/2W-13M005		CF	ROSIE & JOEY OROCCHI	8/31/2011	26.46	-2.2	- -				D
4S/2W-13M006		CF	ROSEMARY & ROBERT MAZZA	8/31/2011	27.42	-3.6	- -				A, D
4S/2W-13P004	PIEZ#3	N	ALAMEDA COUNTY WATER DISTRICT	8/29/2011	25.9	13.9	9/13/2011	110	616	PWC Transducer	O
4S/2W-13P005	WELL G-1	D	Alameda County Water District	8/29/2011	25.98	-3.5	9/13/2011	560	1,138	PWC	
4S/2W-13P006	WELL H-1	F	Alameda County Water District	8/29/2011	26.15	-2.9	9/13/2011	210	700	PWC	
4S/2W-13P007	WELL I-1	C	Alameda County Water District	8/29/2011	26	-2.6	9/13/2011	140	715	PWC	
4S/2W-14C001		CF	HARVEY, T.	8/31/2011	23.27	-3.0	- -			RUN T	A
4S/2W-14D003	Lake Chad	D	Alameda County Water District	8/31/2011	13.95	-4.4	9/21/2011	40	358	PWC Transducer(Solinst)	O
4S/2W-14D004		D	Alameda County Water District	8/31/2011	13.9	-4.3	9/21/2011	140	535	PWC Transducer(Solinst)	

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Well Numbers	Alternate Well I.D.	Aquifer	Owner	Date of Water Level	Reference Elevation (feet msl)	Water Elevation (feet msl)	Water Sample Date	Chloride Result (ppm)	TDS (ppm)	Remarks	Well Type
4S/2W-14D005		C	Alameda County Water District	8/31/2011	14.1	-2.9	9/21/2011	250	713	PWC	
4S/2W-14D006		C	Alameda County Water District	8/31/2011	14.18	-3.0	9/21/2011	86	537	PWC	
4S/2W-14D007		N	Alameda County Water District	8/31/2011	14.07	10.1	9/21/2011	30	345	PWC	
4S/2W-14H003		N	ACFC & WCD	- -	25.22		- -			NMP UTM newly reconstructed well	A
4S/2W-14L006	PIEZ#2	N	ALAMEDA COUNTY WATER DISTRICT	8/29/2011	14.97	10.6	9/21/2011	110	727	PWC	O
4S/2W-14N001	Lowry	N	ALAMEDA COUNTY WATER DISTRICT	9/8/2011	22.64	11.4	9/8/2011	140	713		ARP
4S/2W-14R003		N	MELLO, MELVIN	8/31/2011	26.94	11.6	- -			PWC UTS	AB
4S/2W-15C007	PIEZ#1	N	ALAMEDA COUNTY WATER DISTRICT	8/31/2011	9.31	6.7	9/2/2011	27	347	PWC	O
4S/2W-15L005	Contempo Pk	D	Alameda County Water District	8/31/2011	7.63	-4.5	8/31/2011	290	790	PWC Transducer(Solinst)	O
4S/2W-15L006		C	Alameda County Water District	8/31/2011	7.59	-2.8	8/31/2011	120	662	PWC	
4S/2W-15L007		N	Alameda County Water District	8/30/2011	7.66	8.7	8/31/2011	460	1,192	PWC	
4S/2W-15M003		CF	CITY OF UNION CITY	- -	7.77		- -			NA UTM UTS Need 2010 Key, newly reconstructed well	A
4S/2W-15M004		CF	CITY OF UNION CITY	8/30/2011	7.73	-2.4	- -			UTS	AB
4S/2W-15P001	PIEZ#10	N	ALAMEDA COUNTY WATER DISTRICT	9/7/2011	6.1	8.2	- -			PWC	O
4S/2W-16A004		N	ALAMEDA COUNTY WATER DISTRICT	8/29/2011	4.71	3.9	8/31/2011	7,600	11,800	PWC flooded well box	O
4S/2W-16C011	E-19	N	ALAMEDA COUNTY WATER DISTRICT	8/31/2011	14.16	7.0	8/31/2011	8,400	14,375	PWC	O
4S/2W-16J002	E-23	N	ALAMEDA COUNTY WATER DISTRICT	9/1/2011	8.38	6.8	9/1/2011	2,500	4,790	PWC	O
4S/2W-16K001		CF	MUNSTER (LU 18441)	8/29/2011	7.85	-1.9	- -				DP
4S/2W-16L010	E-25	N	ALAMEDA COUNTY WATER DISTRICT	8/29/2011	7.91	5.0	- -				O
4S/2W-16L011	E-26	N	ALAMEDA COUNTY WATER DISTRICT	9/1/2011	3.34	5.3	9/1/2011	2,800	5,380	NA PWC flooded	O
4S/2W-16L014	E-101	N	ALAMEDA COUNTY WATER DISTRICT	8/29/2011	8.5	4.7	9/1/2011	8,300	15,900	PWC	O
4S/2W-16L015	Site E	N	ALAMEDA COUNTY WATER DISTRICT	8/29/2011	11.82	4.8	- -				ARP
4S/2W-16Q001	E-27	N	ALAMEDA COUNTY WATER DISTRICT	9/1/2011	9.13	5.5	9/1/2011	9,500	17,750	PWC	O
4S/2W-21B007	Site D	N	ALAMEDA COUNTY WATER DISTRICT	9/7/2011	10.94	7.0	- -				ARP
4S/2W-21G001		CF	ALAMEDA COUNTY FLOOD CONTROL	9/7/2011	8.08	-2.9	- -			UTS	DP
4S/2W-21G004	E-31	N	ALAMEDA COUNTY WATER DISTRICT	9/1/2011	8.79	5.5	9/1/2011	12,000	22,400	PWC	O
4S/2W-21G009	E-109	N	ALAMEDA COUNTY WATER DISTRICT	9/1/2011	8.96	6.1	9/1/2011	2,400	4,560	PWC	O
4S/2W-21J001		CF	ALAMEDA COUNTY FLOOD CONTROL	9/7/2011	7.07	-3.3	- -				DP
4S/2W-21N001	E-40	N	ALAMEDA COUNTY WATER DISTRICT	9/8/2011	5.49	3.9	- -			PWC	O
4S/2W-21P001		C	ALAMEDA COUNTY FLOOD CONTROL	9/7/2011	8.17	-2.3	9/2/2011	70	548	OBS@140' PWC	O
4S/2W-21P003	E-39	N	ALAMEDA COUNTY WATER DISTRICT	9/8/2011	3.96	3.7	- -			PWC	O
4S/2W-21Q001		CF	ALAMEDA COUNTY FLOOD CONTROL	9/7/2011	5.73	-2.1	- -			PWC	AB
4S/2W-21Q002	E-36	N	ALAMEDA COUNTY WATER DISTRICT	9/7/2011	5.57	5.3	9/8/2011	8,300	14,400	PWC	O
4S/2W-22H003		N	ALAMEDA COUNTY WATER DISTRICT	9/8/2011	18.16	9.6	- -			PWC	O
4S/2W-22J001		CF	Founders Title Co	9/1/2011	13.09	-4.8	- -			OBS@27'	A
4S/2W-22P002	#8	CF	EAST BAY REGIONAL PARK DIST.	9/6/2011	10.91	-3.1	- -			OFF UTS OBS@26'	A
4S/2W-23F002		CF	CITY OF FREMONT	9/1/2011	15.76	-3.1	8/31/2011	210	630		A
4S/2W-23J002		N	ALAMEDA COUNTY WATER DISTRICT	9/8/2011	24.14	12.5	9/8/2011	400	1,180	PWC	O
4S/2W-24A007		CF	DINO R & RINA M CIARLO	9/6/2011	42.7	-2.5	- -			T	D
4S/2W-24F011		N	LEONARD GEORGE	9/8/2011	30.01	13.6	- -				A
4S/2W-24L001		CF	O.G. JOHNSON	- -	31.63		- -			NMP PI UTM UTS	D
4S/2W-24L003		C	Sohan S & Bhupinder K Virdee	9/7/2011	33.43	-3.5	9/7/2011	230	663	well runs periodically	A
4S/2W-24L006		F	MASUKUNI KITANI	9/7/2011	32	-6.7	- -			T well pumps periodically	D
4S/2W-25D001	CLSTR#1	D	ALAMEDA COUNTY WATER DISTRICT	9/1/2011	22.23	-6.5	9/23/2011	330	787	PWC transducer	O
4S/2W-25D002	CLSTR#1	CF	ALAMEDA COUNTY WATER DISTRICT	9/1/2011	23.47	-4.1	9/23/2011	470	1,110	PWC	O
4S/2W-25D003	CLSTR#1	N	ALAMEDA COUNTY WATER DISTRICT	9/1/2011	22.99	13.1	9/23/2011	230	1,394	PWC	O
4S/2W-25M001		N	ALAMEDA COUNTY WATER DISTRICT	9/27/2011	22.14	11.1	9/8/2011	190	592	PWC	O
4S/2W-26H001		D	EAST BAY REGIONAL PARK DIST.	9/7/2011	19.94	-4.4	9/1/2011	160	568	RUN	A
4S/2W-26K004	CLSTR#2	D	ALAMEDA COUNTY WATER DISTRICT	9/7/2011	20.31	-4.5	9/27/2011	110	494	PWC	O
4S/2W-26K005	CLSTR#2	CF	ALAMEDA COUNTY WATER DISTRICT	9/7/2011	19.91	-4.9	9/27/2011	480	1,224	PWC	O
4S/2W-26K006	CLSTR#2	N	ALAMEDA COUNTY WATER DISTRICT	9/7/2011	19.77	10.8	9/27/2011	130	828	PWC Needs new morrison cap	O

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4S/2W-26L001	CLSTR#3	D	ALAMEDA COUNTY WATER DISTRICT	9/1/2011	15.74	-6.4	9/22/2011	280	920	M PWC cracked pad	O
4S/2W-26L002	CLSTR#3	CF	ALAMEDA COUNTY WATER DISTRICT	9/1/2011	15.26	-5.1	9/22/2011	1,200	2,545	PWC	O
4S/2W-26M008	CLSTR#3	N	ALAMEDA COUNTY WATER DISTRICT	9/1/2011	14.38	8.9	9/22/2011	170	920	M PWC Lid	O
4S/2W-27L001	#10	CF	Founders Title Co.	9/6/2011	9.18	-4.3	- -				A
4S/2W-27L004	#12	CF	Founders Title Co.	9/6/2011	9.6	-4.2	- -				A
4S/2W-28A001	E-37	N	ALAMEDA COUNTY WATER DISTRICT	9/8/2011	6.97	4.3	- -			PWC	O
4S/2W-28C001	E-42	N	ALAMEDA COUNTY WATER DISTRICT	- -	4.69		- -			PWC UTM	O
4S/2W-28D001	E-43	N	ALAMEDA COUNTY WATER DISTRICT	- -	4.84		- -			PWC UTM	O
4S/2W-28G001	E-41	N	ALAMEDA COUNTY WATER DISTRICT	9/6/2011	6.71	3.7	9/8/2011	11,000	19,750	PWC	O
4S/2W-35B002		N	ALAMEDA COUNTY WATER DISTRICT	9/6/2011	15.05	10.2	9/22/2011	620	1,584	OBS@85' PWC	O
4S/2W-36A006	Darvon #1	N	ALAMEDA COUNTY WATER DISTRICT	9/7/2011	34.06	13.0	9/14/2011	120	585	OFF scada	M,ARP
4S/2W-36A007	Darvon #2	CF	ALAMEDA COUNTY WATER DISTRICT	- -	33.6		9/14/2011	240	736	RUN UTM scada	M,ARP
4S/2W-36F005	PIEZ#5	N	ALAMEDA COUNTY WATER DISTRICT	9/8/2011	21.43	11.4	8/23/2011	360	1,260	PWC	O
4S/2W-36N006		N	ALAMEDA COUNTY WATER DISTRICT	9/1/2011	14.67	11.0	8/23/2011	8,600	15,225	PWC	O
4S/2W-36N010	Well T	F	ALAMEDA COUNTY WATER DISTRICT	9/1/2011	16.77	-7.0	8/23/2011	1,200	2,006	PWC	O
4S/2W-36N011	Well U	C	ALAMEDA COUNTY WATER DISTRICT	9/1/2011	17.5	-12.0	8/23/2011	380	920	PWC	O
4S/2W-36N012	Well V	N	ALAMEDA COUNTY WATER DISTRICT	9/1/2011	15.86	11.3	8/23/2011	6,200	11,850	PWC	O
5S/1W-02N001		N	Dean A. & Donna H. Olsen	8/31/2011	38.01	23.6	- -				D
5S/1W-03C007		CF	PRESBYTERY OF SAN FRANCISCO	8/31/2011	50.39	-6.2	8/31/2011	160	828	T ,probe stuck F04	D
5S/1W-03G003		N	LEONCIO H & MAGDELENA C ISLAYA	- -	49.24		- -			EPD NMP OBS@surface	D
5S/1W-04H003	PIEZ#9	N	ALAMEDA COUNTY WATER DISTRICT	8/29/2011	42.88	13.0	9/22/2011	130	920	PWC	O
5S/1W-04H004	Robin & Ladner	C	Alameda County Water District	8/29/2011	45.11	-5.6	9/7/2011	300	942	PWC	
5S/1W-04H005	Robin & Ladner	F	Alameda County Water District	8/29/2011	44.92	-4.9	9/7/2011	220	718	PWC	
5S/1W-04P002		N	ALAMEDA COUNTY WATER DISTRICT	8/29/2011	28.16	12.3	9/22/2011	190	1,110	PWC	O
5S/1W-05B001		N	ALAMEDA COUNTY WATER DISTRICT	8/29/2011	38.26	12.7	9/22/2011	280	1,176	PWC	O
5S/1W-05C001	Farwell	CF	ALAMEDA COUNTY WATER DISTRICT	- -	38.29		9/14/2011	650	1,570	RUN transducer	M,ARP
5S/1W-05H003	WELL C-1	D	Alameda County Water District	8/29/2011	34.31	-4.8	9/7/2011	34	363	M PWC Well #'s need repainting	
5S/1W-05H004	WELL D-1	F	Alameda County Water District	8/29/2011	34.25	-6.5	9/7/2011	35	388	PWC	
5S/1W-05H005	WELL E-1	C	Alameda County Water District	8/29/2011	34.31	-6.8	9/7/2011	800	1,664	PWC	
5S/1W-05H006	WELL F-1	N	Alameda County Water District	8/29/2011	34.29	12.6	9/7/2011	160	1,108	PWC	
5S/1W-05M001	PIEZ#7	N	ALAMEDA COUNTY WATER DISTRICT	8/30/2011	29.42	11.9	9/20/2011	3,000	5,610	PWC	O
5S/1W-06H001		CF	Sam L. Arnold	- -	28.54		- -			EPD NA UTS gated area	O
5S/1W-06H004	Bellflower	CF	ALAMEDA COUNTY WATER DISTRICT	- -	30.25		9/14/2011	650	1,476	RUN	M,ARP
5S/1W-06N006	Site B	N	ALAMEDA COUNTY WATER DISTRICT	8/30/2011	21.04	11.3	- -				ARP
5S/1W-06N007		CF	ALAMEDA COUNTY WATER DISTRICT	8/30/2011	21.65	-12.3	- -			PWC UTS	O
5S/1W-07B036	Silliman - MW	C	Alameda County Water District	8/29/2011	16	-10.5	9/13/2011	230	630	PWC	O
5S/1W-07G010	Y	D	Alameda County Water District	8/29/2011	13.06	-5.9	9/13/2011	110	470	PWC	
5S/1W-07H002		CF	Brook R. & Forrest E. Heath	- -	10.37		- -			EPD OBS@9' UTM UTS	A
5S/1W-07J001	E-77	N	ALAMEDA COUNTY WATER DISTRICT	8/29/2011	9.51	10.1	8/30/2011	2,900	5,460	PWC	O
5S/1W-07J003	Site A	N	ALAMEDA COUNTY WATER DISTRICT	9/1/2011	11.48	9.4	- -			OFF	ARP
5S/1W-07J005	Site A -MW	F	Alameda County Water District	8/29/2011	11.45	-5.0	9/13/2011	9	361	PWC	O
5S/1W-08D001	E-117	N	ALAMEDA COUNTY WATER DISTRICT	8/29/2011	18.15	11.0	9/22/2011	2,900	5,860	PWC	O
5S/1W-08G002	E-81	N	ALAMEDA COUNTY WATER DISTRICT	8/29/2011	15.36	11.0	9/13/2011	840	1,980	M PWC obst	O
5S/1W-08P004	E-82	N	ALAMEDA COUNTY WATER DISTRICT	8/30/2011	8.7	8.0	- -			M PWC Pumps sand	O
5S/1W-10K002		CF	SOUTHLAKE MOBIL HOME PARK	- -	26.96		8/31/2011	240	852	NMP	A
5S/1W-14B003		N	J.C. & A.C. LOPES	8/30/2011	38.26	17.3	- -				A
5S/1W-16M006	AutoMall-C	C	ALAMEDA COUNTY WATER DISTRICT	8/31/2011	11.67	-6.9	8/24/2011	980	1,636	M PWC need well no.'s repainted	
5S/1W-16M007	AutoMall-F	F	ALAMEDA COUNTY WATER DISTRICT	8/31/2011	11.91	-4.8	8/24/2011	12	390	M PWC need well no's repainted	
5S/1W-16M008	AutoMall D1	D	ALAMEDA COUNTY WATER DISTRICT	8/31/2011	11.86	-4.4	8/24/2011	11	346	M PWC need well no's repainted	
5S/1W-17A003	E-115	N	Alameda County Water District	8/29/2011	10.2	9.9	8/24/2011	1,500	2,972	PWC	O
5S/1W-17J001		CF	OAKLAND SCAVENGER CO.	- -	6.47		9/6/2011	700	1,384	RUN T	I

Alameda County Water District
Groundwater Monitoring Program
Fall 2011

Well Numbers	Alternate Well I.D.	Aquifer	Owner	Date of Water Level	Reference Elevation (feet msl)	Water Elevation (feet msl)	Water Sample Date	Chloride Result (ppm)	TDS (ppm)	Remarks	Well Type
5S/1W-17J006	E-113	N	Alameda County Water District	9/6/2011	6.25	A	8/24/2011	1,800	3,680	PWC	O
5S/1W-22H001	E-100	N	Alameda County Water District	9/1/2011	10.42	4.2	9/21/2011	20,000	30,950	OBS@70' PWC	O
5S/2W-01B002		C	J.S. OLIVEIRA	9/7/2011	18.59	-16.2	9/7/2011	710	1,564	PWC OBS@85'	AB
5S/2W-01E007		N	SERAFINA M. MENDES	- -	16.86		- -			NMP UTM UTS	D
5S/2W-01R001	E-68	N	ALAMEDA COUNTY WATER DISTRICT	8/30/2011	16.31	11.2	8/30/2011	4,500	7,960	PWC	O
5S/2W-01R014		C	Alameda County Water District	8/30/2011	15.08	-14.7	8/30/2011	890	1,850	PWC	
5S/2W-02C005	E-123	N	ALAMEDA COUNTY WATER DISTRICT	9/1/2011	9.81	7.1	- -				O
5S/2W-02E002	E-104	N	ALAMEDA COUNTY WATER DISTRICT	8/30/2011	5.09	2.4	9/9/2011	7,000	11,600	PWC	O
5S/2W-02F003	Well W	C	ALAMEDA COUNTY WATER DISTRICT	8/30/2011	10.36	-5.2	9/9/2011	610	1,184	PWC	O
5S/2W-02F004	Well X	N	ALAMEDA COUNTY WATER DISTRICT	8/30/2011	10.34	7.4	9/9/2011	810	2,116	PWC	O
5S/2W-02M006	E-51	N	ALAMEDA COUNTY WATER DISTRICT	8/30/2011	7.93	3.1	9/9/2011	13,000	35,850	PWC	O
5S/2W-02M007	Site C	N	ALAMEDA COUNTY WATER DISTRICT	8/30/2011	11.08	4.0	- -			UTS	ARP
5S/2W-02Q001		N	ALAMEDA COUNTY WATER DISTRICT	8/30/2011	9.5	6.4	- -			M PWC well lid damaged	O
5S/2W-03G001	E-44	N	Alameda County Water District	8/30/2011	6.9	4.1	8/30/2011	14,000	23,500	PWC	O
5S/2W-03H002	E-47	N	Alameda County Water District	8/30/2011	4.89	3.9	- -			PWC	O
5S/2W-11H002	E-60	N	Alameda County Water District	8/31/2011	9.47	5.7	9/9/2011	1,000	1,964	PWC	O
5S/2W-12B008		D	LESLIE SALT CO.	- -	12.49		- -			UTM capped M.P.	I
5S/2W-12B009		D	MORTON SALT	- -	14.82		- -			NMP UTM UTS Morton not using well	I
5S/2W-12B020		F	MORTON SALT CO.	- -	12.73		9/6/2011	830	1,676		
5S/2W-12C003	E-62	N	Alameda County Water District	8/31/2011	10.1	6.8	9/9/2011	28,000	42,400	PWC	O
5S/2W-14E005	DE1-D1	D	ALAMEDA COUNTY WATER DISTRICT	8/30/2011	7.92	13.4	8/30/2011	37	379	PWC	
5S/2W-14E006	DE1-F	F	Alameda County Water District	8/30/2011	7.96	10.5	8/30/2011	63	341	PWC	
5S/2W-14E007	DE1-C	C	ALAMEDA COUNTY WATER DISTRICT	8/30/2011	7.77	6.3	8/30/2011	13	276	PWC	
5S/2W-14E008	DE1-N	N	ALAMEDA COUNTY WATER DISTRICT	8/30/2011	7.75	3.6	8/30/2011	43,000	71,000	PWC	
5S/2W-14E009	DE1-D2	D	ALAMEDA COUNTY WATER DISTRICT	8/30/2011	7.88	A	8/30/2011	62	446	PWC	
5S/2W-17F002		N	LESLIE SALT CO.	8/31/2011	7.7	7.2	- -			PWC	O
5S/2W-17F003		CF	LESLIE SALT CO.	8/31/2011	7.8	A	- -			PWC	O

APPENDIX E

ABBREVIATIONS

GROUNDWATER MONITORING RECORDS

DESCRIPTION OF ABBREVIATIONS

Alternate Well Identifications

Clstr#1	Cluster Well
Peiz#4	Piezometer

Aquifer Codes

AHF	Above Hayward Fault
CF	Centerville-Fremont
C	Centerville
F	Fremont
D	Deep
N	Newark

Water Sample and Water Level Remarks

BRD	Buried
BOT	Bottles were not filled by owner/operator
C2T	Cap too tight
DA	Denied access (owner/operator refusal or locked gate)
EPD	Electrical power disconnected
NA	Not accessible (physically unable to access the well)
NMP	No measuring port
OBS@##	Obstruction at ## depth (feet)
OFF	Pump off therefore unable to obtain a water sample
PI	Pump inoperative
POINT	Well point-not screened in aquifer
PWC	Pump with compressor
Run	Pump running therefore unable to obtain water level
T	Sample obtained from tank
UTL	Unable to locate
UTM	Unable to measure depth to water
UTS	Unable to sample

Well Type

AB	Abandoned
A	Agricultural
ARP	Aquifer reclamation program
D	Domestic
DP	Duck pond
I	Industrial/non-agricultural commercial
M	Municipal (non-recreational)
MR	Municipal Recreation
O	Observation

Other Abbreviations

A	Flowing Artesian Conditions (Water level is above the ground surface)
M	Maintenance Needed
ppm	Parts per million or milligrams per liter
msl	Mean sea levels

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